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SEPTEMBER 1960

$1.00

FOOD ENGINEERING

BETTER MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

A CHILTON PUBLICATION

Campbell Sharpens Executive Talent — p. 43

"HIRE" THIS FOOD SPECIALIST...

NO SALARY REQUIRED!

- **Years of practical experience in solving food production problems!**
- **Can help with your vitamin enrichment and fortification procedures**
- **Offers unlimited supply of vanillin**
- **Know-how of years of leadership in color field**

THIS FOOD SPECIALIST is a Sterwin Technically-Trained Representative . . . an expert with technical and practical experience to help you produce better food products more easily and economically.

He's cut time, expense, production steps in dozens of cases . . . is relied on by food manufacturers (large, medium, small) for prompt solutions to color, vitamin, vanillin and other food ingredient problems.

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FOOD ENGINEERING

BETTER MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

A CHILTON PUBLICATION
VOL. 32 NO. 9

September, 1960

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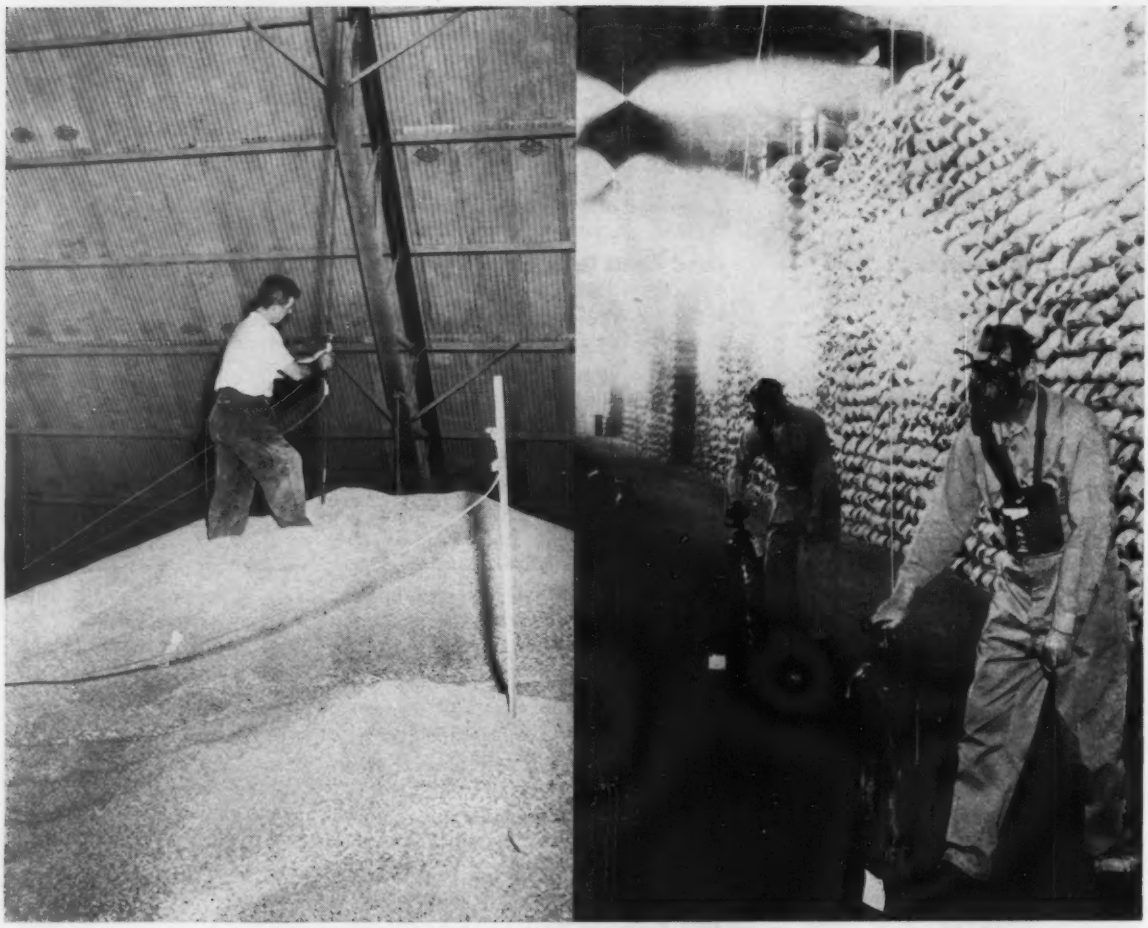
EXCLUSIVE—

"We're training men with ability to fill tomorrow's as well as today's executive needs," says Campbell Pres. W. B. Murphy. FE spotlights firm's sharp management development program—p. 43.

DOW | FUMIGANTS



From storage bins to processing plants . . .

PROTECT STORED PRODUCTS WITH DOW FUMIGANTS

Whether you store bulk food, process it, or ship it, there's a Dow fumigant designed to protect your products from devouring or damaging attacks by over fifty different types of insects and rodents.

Use Dow Methyl Bromide for almost every method of fumigation – space, chamber, tarpaulin, boxcar or forced-air recirculation of bulk grains. Methyl Bromide quickly penetrates throughout all parts of the stored product; controls all forms of insects and rodents; and leaves no residual tastes or odors.

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Call your nearest Dow sales office for full information on the proper Dow Fumigant for your storage application. Or write: THE DOW CHEMICAL COMPANY, Agricultural Chemicals Sales Department 224BH9, Midland, Mich.

Products Advertised Herein Comply with U. S. Law
When used as directed on label and in accordance with good practice, they comply with the Food and Drug Law and other Federal Laws.

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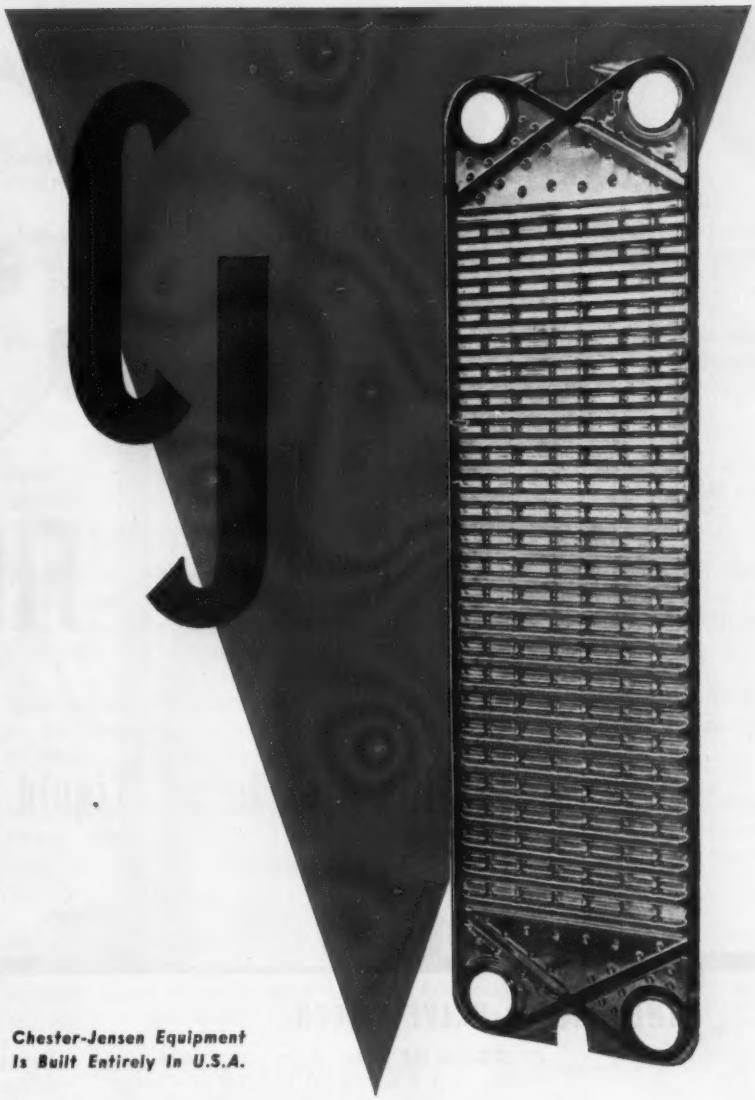

Chester-Jensen Equipment Is Built Entirely In U.S.A.

In evaluating a plate heat exchanger to economically solve problems of heating and/or cooling liquids, it's the plates themselves that count. How efficient . . . how many . . . how arranged . . . how strong . . . how easily serviced . . . even how manufactured?

The typical Chester-Jensen plate pictured above makes it a real pleasure for us to answer your every question relating to the definite capabilities of our machines in your particular service.

Correspondence is invited.

CHESTER-JENSEN COMPANY
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CHESTER, PA.

Specialists in Stainless Steel Industrial and Food Equipment

A NEW 4 in 1 FILLER by fmc

High Speed Filling of Juice · Liquid · Syrup · Brine

Illustrated: 307x700 can in filling position

THE FMC 18 VALVE FILLER

FILLS CANS OR JARS—from 202 to 404 diameter, with a minimum number of change parts. It will handle containers from 200 to 800 tall by simple vertical adjustment of filler bowl.

HIGH SPEEDS: up to 400 cpm depending on product and container size. Chain feed, worm timer and tangential take-off contribute to smooth, gentle handling.

HANDLES A WIDE RANGE OF PRODUCTS:

Liquids and juices: including tomato juice, peach and pear nectars, pineapple-grapefruit juice drink, pineapple juice.

Syruping: such as peaches, apricots, pears, fruit cocktail, figs, cherries.

Brining: adds brine to such products as spinach, diced carrots, green beans, peas, small potatoes, dry beans, pork and beans.

HIGH ACCURACY: extraordinary open-vent gravity-type valve design permits the valve's vent tubes to *drain completely* before cans leave the machine, providing greatest accuracy and uniformity of fill at high speeds. Can-lifts give positive, automatic "No Can, No Fill" operation, reducing the problems of spillage and waste. Head space is readily adjusted.

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TRENDS & FORECASTS

SPECIAL FOOD SERVICE to EXECUTIVES

Sales of retail food stores were 7% higher in June '60 than a year earlier. Business amounted to $4,617 million dollars for month.

Dollar volume of eating and drinking places was up 4% in June compared to '59. Sales amounted to $1,358 million, according to Department of Commerce.

Consumer demand for food is expected to continue strong as economic activity, employment, and consumer income are sustained at high levels. This is forecast of USDA, which also reports that food supplies will be large.

Retail food prices will decline to some extent in next few months, with seasonal increases in supplies of major products. But, prices are expected to remain a little higher than they were last year.

More beef, veal and lamb will be available to consumers this fall than in the same period of '59, according to USDA. Supply of lard will drop with reduced slaughter of hogs. At least as much poultry meat will be available, although supply of eggs will be less.

Milk and dairy products will be in greater supply during the second half of '60 than they were a year earlier, because milk production is expected to continue higher.

Supplies of fresh fruits and vegetables will be above average in months ahead. More canned fruit juices and almost as much of the other processed fruits will be available this marketing season as in '59-'60. There will be some reduction in canned vegetables.

Sales by meat packers in '59 are estimated at 3% above '58 for record $13.4 billion. Net earnings were up 65% to $135 million. Earning ratios average 1% of dollar of sales, 5.3 cents per dollar of assets, and 8.2 cents per dollar of net worth, American Meat Institute reports.

Total tonnage of meat animals processed in '59 increased 4%, the gain being chiefly accounted for by a 13% increase in hogs.

Operating expenses of meat industry increased 9% last year, an 8% boost in wages and salaries being a major factor. Costs of employee benefit programs amounted to 4% of total expenses. And weekly earnings of production workers averaged 24% higher than for all manufacturing.

Production of frozen asparagus this season amounts to 32,738,754 lb., National Assoc. of Frozen Food Packers reports. Stocks amounted to 34.2 million lb. as of July 1, indicating that rate of movement is satisfactory.

Increases in use of metal cans in '59 amounted to 33.9% for soft drinks. Other gains were: Beer, 9.8%; meat (including poultry), 7.4%; coffee, 5.7%; miscellaneous foods (such as soups and baby foods), 2.5%; food and vegetables (including juices), 0.3%. Decreases in use of metal cans were: Fish and seafood, down 6.6%; evaporated and condensed milk, 1.7%; other dairy, 12.5%; lard and shortening, 0.1%.

Food store sales of canned carbonated soft drinks are forecast at a record 750 million units in '60 by National Association of Retail Grocers of U. S. The increase last year amounted to 35% for a total of 545 million cans.

See Developments to Watch p. 13

How do you like 'em ?

. . . any way you want them, there's a high-speed, precision Urschel machine for **every** kind of pickle cutting job. And cost-minded Pickle Packers know from experience the economy, dependability and uniform product quality identified with these widely used units. Model OV Slicers, for example, produce flat or crinkle-cut cross-cut slices at the rate of **500 slices per second . . .** cutting one slice at a time so there's **no** product crushing on even soft or hollow center pickles. For perfectly diced relish it's the Model RA . . . turning out up to **10,000 lbs. per hour.** Large (3/4" x 1" x 1") sweet mix chunks are delivered by the Model H at capacities up to **15 tons per hour.**

*When you have a pickle cutting problem, remember Urschel engineers have the **experienced** answers.*

"Be sure to stop at Urschel Booths 21-24,
The Pickle Fair, Oct. 19-21,
Edgewater Beach Hotel, Chicago."

PRECISION HIGH-SPEED FOOD CUTTING EQUIPMENT

URSCHEL
LABORATORIES INC.
VALPARAISO INDIANA

Designers and manufacturers of precision, high speed cutting equipment for food products

Schedule of Events

September

14-16—National Industrial Conference Board, conference; Waldorf-Astoria, N. Y. C.

20-21—Food & Container Inst., R&D Assn., conference; Stock Yard Inn, Chicago.

25-29—Master Brewers Assn., meeting; Statler-Hilton, Los Angeles.

26-28—American Management Assn., personnel conference; Statler Hotel, N. Y. C.

26-30—Instrument Society of America, meeting; Coliseum, N.Y.C.

October

6- 8—National Pretzel Bakers Inst., meeting; Pittsburgh Hilton Hotel, Pittsburgh.

12-14—Mayonnaise & Salad Dressing Manufacturers Assn., meeting; Drake Hotel, Chicago.

15-19—American Bakers Assn., meeting; Hotel Sherman, Chicago.

17-19—American Oil Chemists' Society, meeting; New Yorker Hotel, N. Y. C.

19-21—National Pickle Packers Assn., meeting; Edgewater Beach Hotel, Chicago.

HORS D'OEUVRES

▸ Senator Smith wants to honor the fishing industry with a stamp depicting the sardine. But other senators think this would be an insult to the nation's commuters.

▸ **Mint-flavored toothpicks are an ingenious development. They almost make one enjoy his caries.**

▸ Russia is buying equipment from the U. S. to develop an efficient broiler industry. Would be nice if the chicken-minded Reds became a bit chicken-hearted.

▸ **Know why people consider Miller High Life beer a fine beverage? The brewery has carefully promoted the quality image in its advertising. And the product fits the image.**

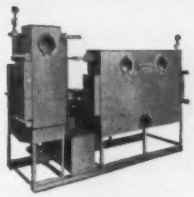
▸ New supermarket design puts low fixtures for perishables in the center area. The increased visibility should reduce the traffic hazard.

▸ **Minute Maid gives an "award" each month to the employee who talks the longest in a long-distance call. 'Tis known—of course—as the Joe Blow Award.**

▸ A model electronic supermarket has been built in England. Customer selections are mechanically marked on a card, the card is machine processed, and the order is automatically delivered from warehouse to pick-up counter. But the bill still is paid the hard way.

KATHABAR® SYSTEMS

Give these advantages to specifying engineers:



STERILE AIR

Now you can design spaces to maintain air sterility as scientifically as temperature and humidity. Only Kathabar enables you to deliver air at 5 micro-organisms per 10 cu. ft. or less, continuously.

PRECISE DESIGN

Reduce dew point of air from 72 F to 46 F with 85 F water! No over-cool & re-heat costs. Kathabar lets refrigeration handle sensible cooling only (sensible, economical). Deliver consistent gr./lb. and DB for process, storage, testing in sugar cooling... instant coffee packaging... processing of spices... cellophane package lines.

GET FACTS

Surface Combustion · *2382 Dorr St., Toledo 1, O.*
A Division of Midland-Ross Corporation

Send facts on Kathabar systems for following application:

.....

.....

name & title.....

company.....

street.....

city.....*zone*.....*state*.....

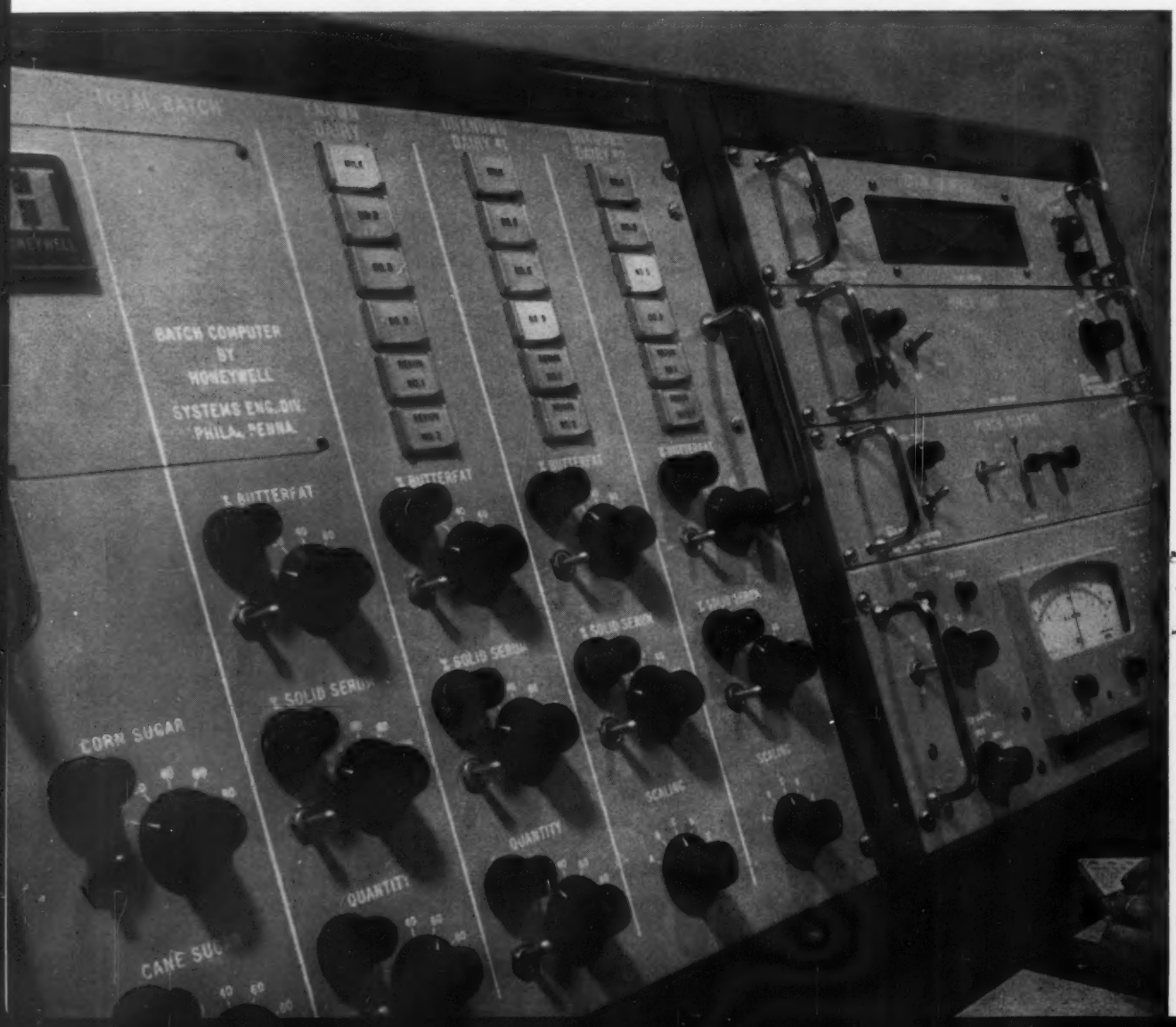
59-3F

First fully automatic

A new computer-directed ice cream mixing plant installed by H. P. Hood & Sons, Boston, is completely automatic from raw ingredients to flavoring. A Honeywell analog computer provides the means for fully automatic handling of raw products, formulation, blending, and cleaning. Quick and exact formulation results in precise butterfat control, which yields high quality ice cream.

The analog computer solves the basic mix formula in about six minutes, with a normal accuracy of ±.02%. Solutions are recorded on punch cards for programming the flow blending system that simultaneously and automatically blends all ingredients, thereby decreasing production time. The accounting department also uses these punch cards to provide continuous inventory and cost records.

From a Honeywell graphic panel, one man can operate the entire installation. Lighted symbols show exactly what's going on . . . what pumps are on, what the levels are in the tanks, etc. The panel also shows the sequence of the automatically controlled cleaning operation. From a push button start, all tanks and lines, even the HTST system, are under automatic cleaning and process control.



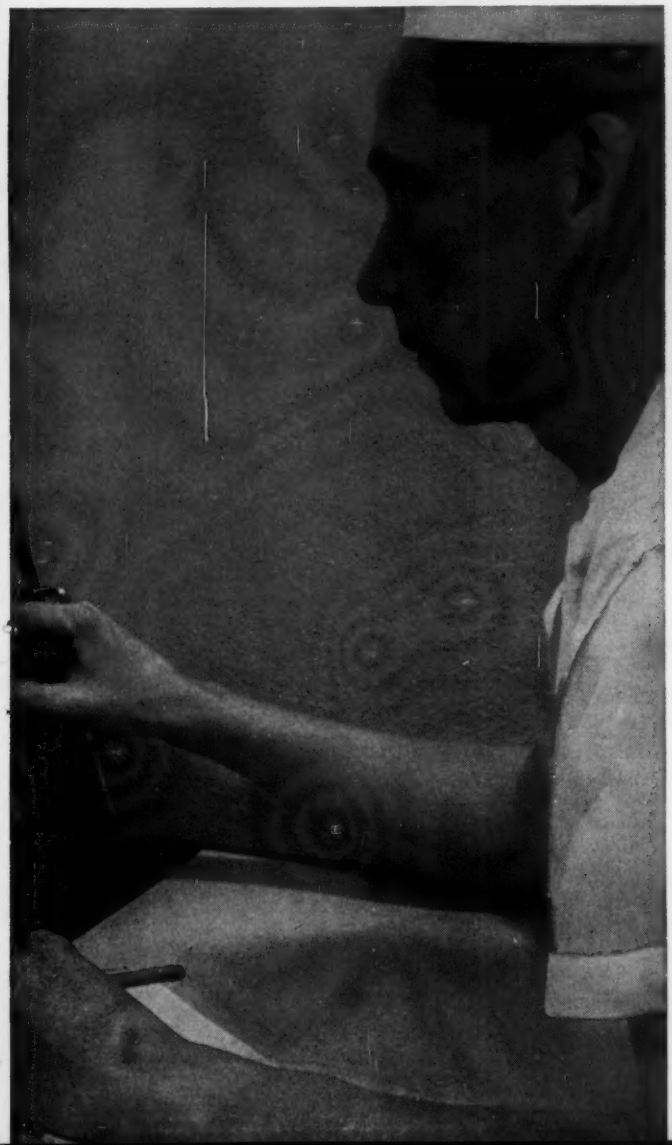
food plant

Your Honeywell representative can help you gain the advantages of the latest computer techniques in automatic process control. See him for complete system design, installation, maintenance and service. Ask him about personnel training. Seek his advice on renting a computer system. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.—In Canada, Honeywell Controls, Ltd., Toronto 17, Ontario.

Punched card programs automatic flow blending system in which all ingredients are blended simultaneously.

Computer analyzes and resolves desired mix information, which is translated to a punched card. The computer program involves six dairy ingredients, water, and two non-dairy ingredients and is based on butterfat content and serum solid content of raw material.



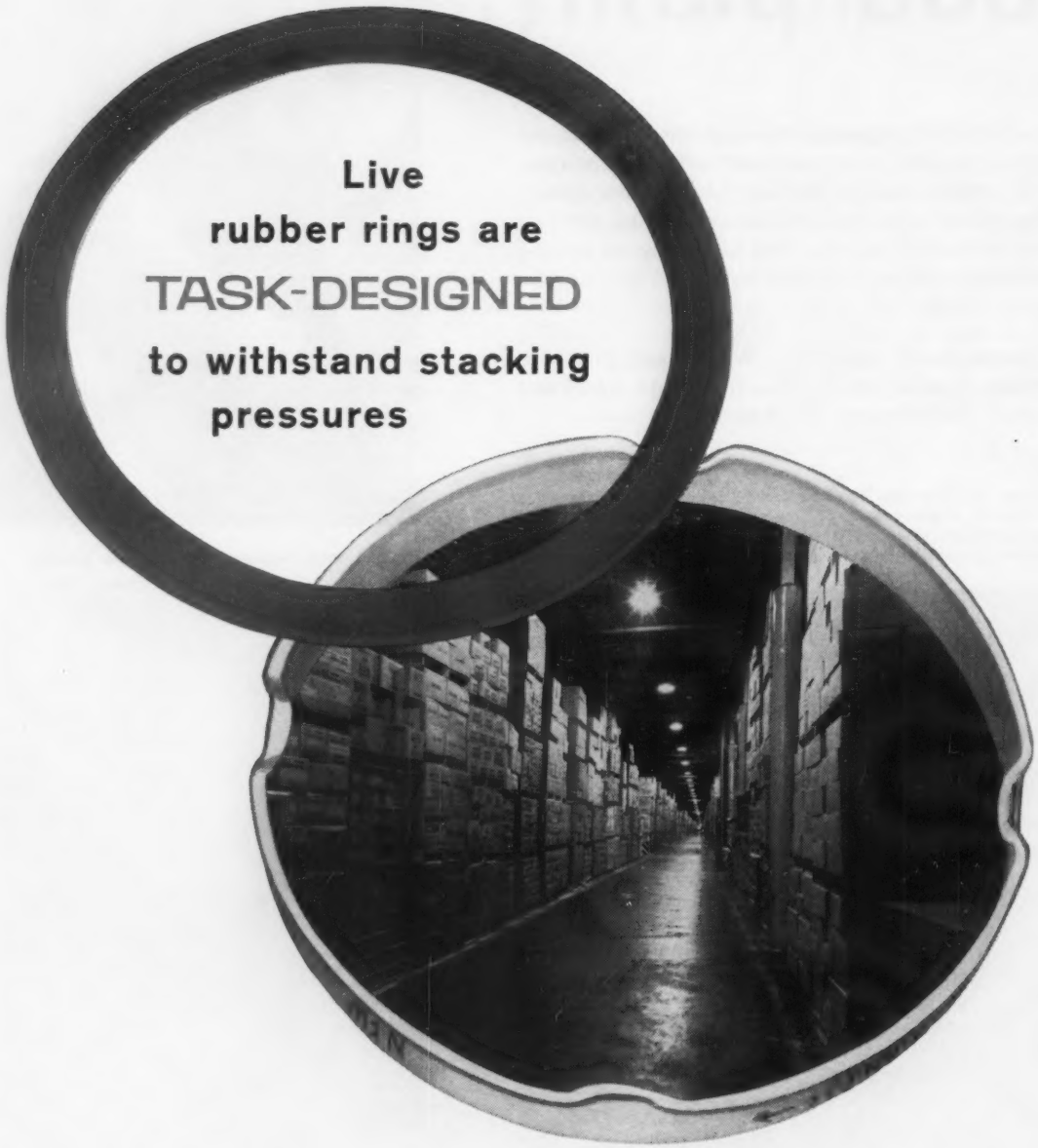
Graphic panel gives overall view of the process, and includes provision for automatic clean-in-place of the process including tanks and pipelines. The entire system can be operated at full efficiency by production personnel.

75th YEAR PIONEERING THE FUTURE

Honeywell

First in Control

SINCE 1885



Task-Designed live rubber rings—an exclusive feature with Crown lug caps—protect your package against warehouse pressures. Thick, resilient rubber rings add an important safety factor, guarding product quality and assuring normal shelf life.

The natural and unmatched resilience of live rubber also means you get better sealing despite minor irregularities in the glass. There are many additional advantages you get from Crown lug caps. Don't do without them! Send for details today!

CROWN

for closures · cans · crowns · machinery

CROWN CORK & SEAL CO., INC., 9300 Ashton Rd., Philadelphia 36, Pa

← CIRCLE 11 ON READER SERVICE CARD

CIRCLE 12 ON READER SERVICE CARD

DEVELOPMENTS TO WATCH

SPECIAL FOOD SERVICE to EXECUTIVES

See Who's Building What p. 17

Washington Report p. 23

Liquefied gas propellent for food aerosols may soon be available. FDA has accepted, for filing, a petition for approval of use of Freon-C318, Du Pont reports. When added to extent of 15% to compressed nitrous oxide, Freon provides more effective dispensing of products where foam discharge is desired. It also extends the list of potential aerosols to such items as cream cheese.

Distributing bread in frozen form could reduce cost two cents per pound loaf, according to USDA. Economy in production and distribution of frozen product can more than offset added cost of freezing, according to researchers.

A pilot plant for removal of strontium-90 from milk has been installed by Pevely Dairy in St. Louis. Pevely will install a removal system for all of its milk as soon as one can be devised that does not harm the mineral balance of the milk.

New products recently displayed at a poultry convention include frozen French toast, frozen fried egg, egg Cantonese, onion egg dip, and individual polyethylene containers for packaging eggs out of the shell.

In Cornell experiment, cottage cheese has been kept 10 weeks at 40F. without development of yeast or molds, and with little flavor change. This was achieved by packaging cheese under vacuum, followed by gassing container with carbon dioxide.

Higher percentage of lean cuts, together with lower feed cost, have been achieved by feeding pigs on corn-and-cob meal made of whole ear. Experiments are part of long-term USDA project to develop leaner types of hogs.

Off-flavors that develop in dehydrated foods during storage have been substantially reduced by US Army Quartermaster Corps. The enzyme glucose oxidase catalase is used to remove molecular oxygen from food.

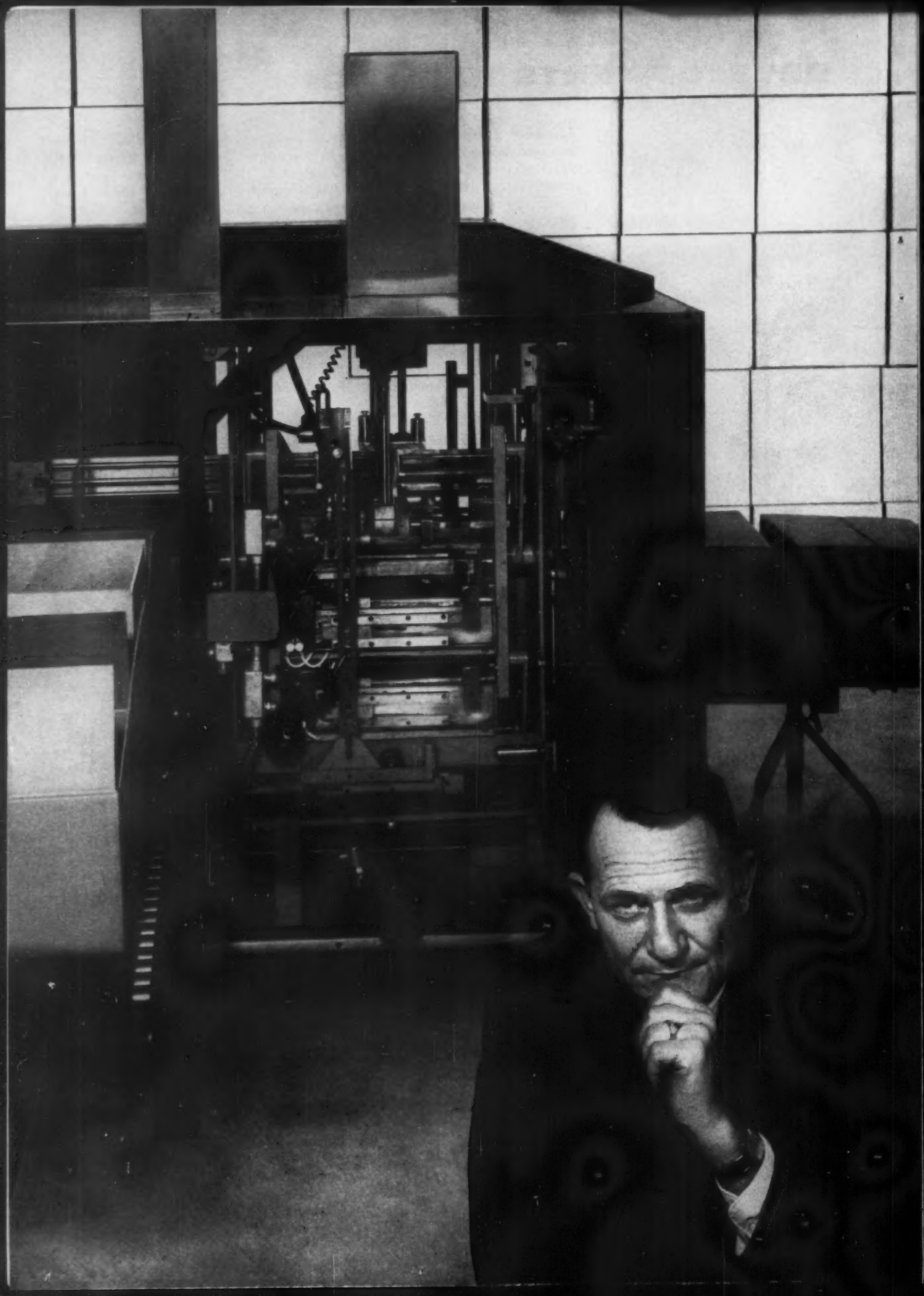
The new oxygen scavenger is employed now to stabilize bulk quantities of Army's new precooked dehydrated, quick-serve meals. The enzyme is contained in a small porous packet placed inside package prior to sealing. The technique is reported to be faster and more economical than conventional packaging with inert gas.

FDA has approved the packaging of food products in paper coated with silicone material made by Dow Corning. Extensive tests proved that there is no transfer of any "additive" to food packaged in the silicone coated material. An important advantage of the silicone treated paper is that sticky foods do not adhere to it.

Replacement of 30-lb. tin for institutional packs of strawberries is being researched by Western Kraft Corp. The substitute container is a corrugated-poly bag package. Lower cost, savings in handling and sanitation are advantages seen for new container.

Red cherries may eventually be harvested mechanically instead of being picked by hand, according to USDA. Grippers mounted on tractors shake limbs rapidly, but lightly, and cherries fall into collecting canvases. Latter are stretched over a sloped tubular frame to avoid bruising fruit. With such equipment, seven men do the work of 33 hand pickers.

Green Giant used hydro-cooling to improve quality and level production peaks in asparagus packing plants this season.



Meet our mechanical man

Bill Jacobi has been fighting packaging inefficiency since the days of string tying.

Some day he hopes to win. Many claim he already has. Particularly users of Union-Camp shipping containers.

It's easy to understand why. As a result of putting some of his automation ideas to work, these companies have saved thousands of dollars in reduced handling and labor costs. To say nothing of increased production rates.

According to Bill, who's Director of our Package Engineering Department, packaging costs are like an iceberg. Only the top portion—or surface costs—can be seen. This is represented by the packaging materials.

It's the hidden costs that cause the trouble. These sizable expenses take the form of filling, handling, weighing, maintenance, labor, closing, warehousing and product damage. And it takes an expert to analyze them and make recommendations that will keep them to a minimum.

This is precisely the type of service Bill and his team of specialists provide. Their studies cover inventory control. Plant layout. Filling and handling techniques and equipment. Manpower expense. Adaptability of containers to palletizing as well as to present (and anticipated) traffic flow. In fact, anything that contributes ultimately to reducing the unit-packaging-cost of the product—whether it's applesauce or appliances.

As Bill puts it, "In today's profit-squeeze economy, one of the only avenues left for achieving significant savings is through more streamlined packaging and handling of the manufactured product. It's an avenue well worth exploring."

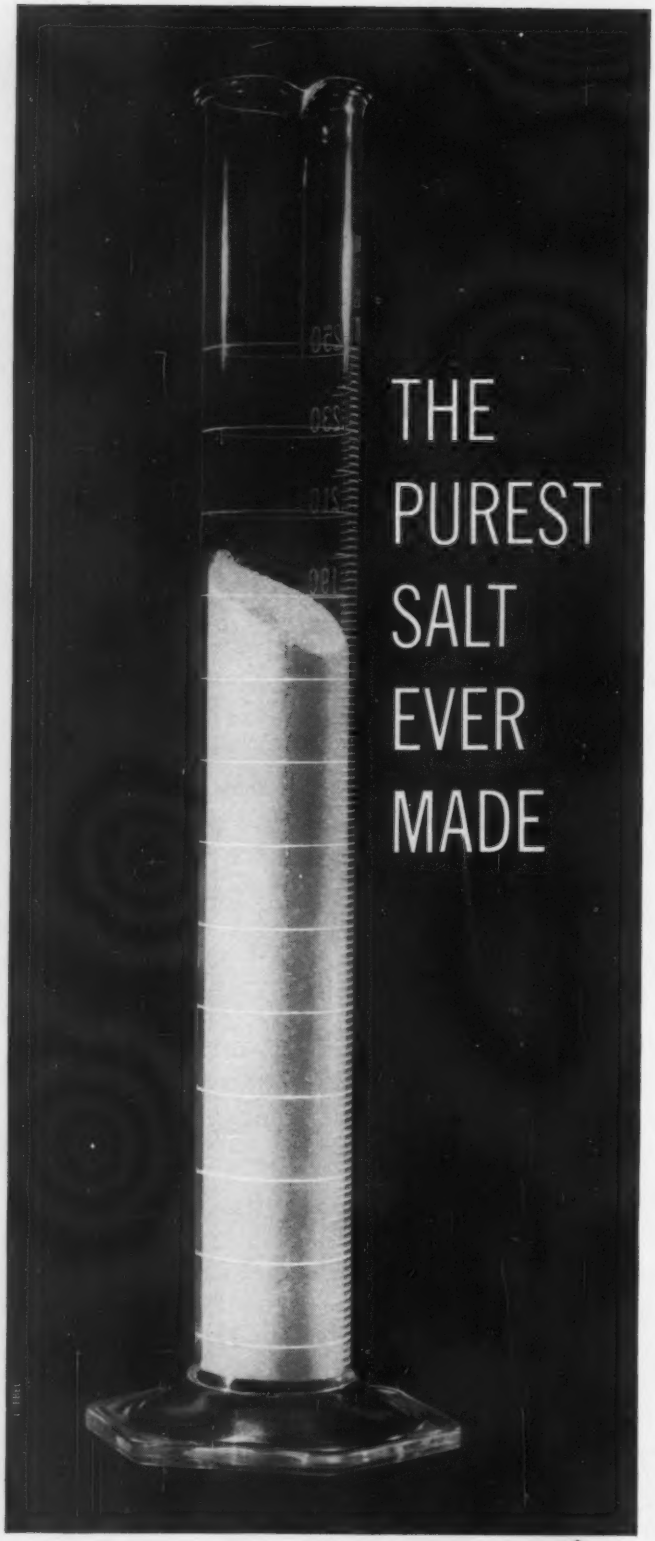
If you agree, he'll be glad to explore it with you. There's no obligation. Just drop us a note on your letterhead.

UNION-CAMP®

CORRUGATED BOXES

Union Bag-Camp Paper Corporation · 233 Broadway N.Y. 7, N.Y.

Plants: Savannah, Georgia · Trenton, New Jersey · Chicago, Illinois · Lakeland, Florida · Spartanburg, South Carolina · Jamestown, North Carolina
Subsidiaries: Allied Container Corporation, Dedham, Massachusetts
The Eastern Box Company, Baltimore, Maryland.



■ By actual analysis, Sterling Purified Salt is more than 99.9% sodium chloride. It contains less than 30 ppm calcium and magnesium, less than 0.2 ppm trace metals. This exceptional purity, as well as uniform granulation, makes Sterling Purified Salt ideal for butter, oleomargarine, cheese, salad dressings, potato chips, baked goods, canning, meat packing . . . hundreds of other processes where flavor, color and texture must be protected. Free-flowing Sterling Purified Salt can be used in dry form. Or it can be made into clear, fully saturated brine in the new Brinomat dissolver. The all-plastic Brinomat, available in many sizes, has the highest flow rating of any similar dissolver. Contact International Salt Co.,headquarters: Clarks Summit, Pa. District offices: Boston, Buffalo, Charlotte, Chicago, Cincinnati, Detroit, Newark, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis.

INTERNATIONAL STERLING SALT SALT COMPANY

"A STEP AHEAD IN SALT TECHNOLOGY"

WHO'S BUILDING WHAT...

Monthly Report: Food firms to spend $3,646,294 for expansion.

Low Bids/Contracts

Allstate Packing Co., Houston, Tex., meat packing plant, $160,000.

American Bakeries Co., Orlando, Fla., plant, $899,200.

Anheuser Busch, Inc., St. Louis, Mo., grain storage bins, $350,000.

Butternut Coffee Food Co., Commerce, Calif., processing warehouse, $500,000.

Empire Seafood Co., Birmingham, Ala., cold storage plant, $293,000.

Home Milk Producers Assn., Miami, Fla., plant addn., $193,780.

Kimbell Millings Co., Fort Worth, Tex., grain storage bldg., $110,000.

Olympia Brewing Co., Tumwater, Wash., beer cellar, $452,660.

Philadelphia Chewing Gum Corp., Havertown, Pa., warehouse, $110,000.

Prosser Packers, Prosser, Wash., food processing plant, $207,654.

Spector & Sons, Miami, Fla., processing plant, $120,000.

Sue Ann Food Products Co., Chicago, Ill., processing plant, $250,000.

Proposed Work

Delchamps, Inc., Mobile, Ala., plant, $150,000.

Eggo Food Products, San Jose, Calif., warehouse, $750,000.

Falstaff Distributing Co., Houston, Tex., warehouse, $110,000.

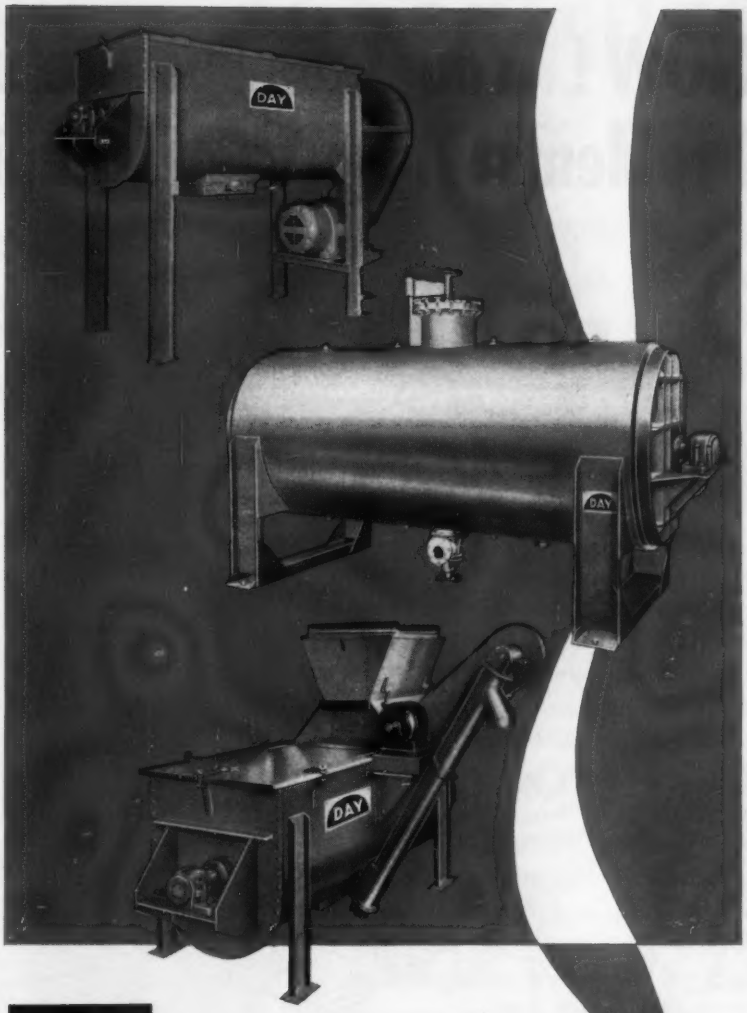
H. W. Lay & Co., Louisville, Ky., potato chip mfg. and distributing plant, $500,000.

Rice Growers Assn., Stuttgart, Ark., milling plant, $500,000.

Smithfield Packing Co., Exmore, Va., meat processing plant, $110,000.

Swift & Co., Clovis, N. M., meat packing plant, $1,000,000.

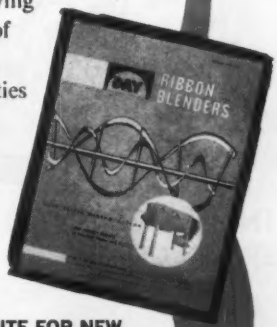
Royal Bottling Co., Nashville, Tenn., bottling plant, $500,000.



DAY builds RIBBON BLENDERS

to meet all your needs - - -

for perfect blending of powders, pastes or liquids. DAY builds ribbon blenders having rugged tanks of many designs, in a variety of materials . . . with powerful drives . . . and various types of agitators . . . in capacities that range from 7½ to 3850 gallons. Often combined with such allied DAY equipment as Ro-Ball or Brush Sifters that save floor space and increase your efficiency. Whatever your mixing requirements, there's no better buy than a low cost, trouble-free DAY Ribbon Blender!



WRITE FOR NEW BULLETIN No. 800. It gives you detailed information on the complete line of DAY RIBBON BLENDERS.

The **J. H. DAY** *Co.*

Division of The Cleveland Automatic Machine Co.

4924 Beech Street, Cincinnati 12, Ohio

MANUFACTURERS OF QUALITY MIXING, BLENDING, SIFTING, MILLING EQUIPMENT SINCE 1887

NOW! You Can End Refuse Storage Problems...WITHOUT Capital Outlay

IN ALL LEADING CITIES
FROM COAST TO COAST

DUMPMASTER-Equipped Private Haulers Provide Containers and Efficient Service

If you're plagued with trash piles, scattered refuse, fire hazards, and hit-or-miss collection, there's a good chance you can do something about it . . . WITHOUT CAPITAL OUTLAY!

In most major cities DEMPSTER-DUMPMASTER-equipped private haulers will put clean, big-capacity storage containers at convenient locations in your plant . . . empty them mechanically on schedule, or on a call-in basis . . . all for a reasonable monthly fee.

When you containerize your refuse, plant housekeeping becomes easy, employee morale goes up.

Write today for the name of your nearest private hauler. We'll also send literature describing his service.

DEMPSTER DUMPMASTER®
Equipped Private Haulers

Write Today for
Free Brochure and Name of Nearest Private Hauler
DEMPSTER BROTHERS
Inc.
Dept. FE-9 KNOXVILLE 17, TENNESSEE

CIRCLE 19 ON READER SERVICE CARD →

MORE THAN A SUBSTITUTE

...DUPLICATES REAL BEEF FLAVOR

Now leading manufacturers are replacing costlier materials and getting better flavor with MAGGI's Hydrolyzed Plant Proteins. MAGGI's *cleaner, clearer, meatier* flavor is always uniform. Its flavor is constant under all processing methods and it effects substantial savings in costs. This superior flavor is always dependable without variations in quality and taste. There are MAGGI's Hydrolyzed Plant Proteins that are perfect for use as basic flavors for beef, pork, veal, fowl or fish — to reinforce meat extracts and broth and as prime ingredients in soup and gravy bases. Technologists, who have developed the unique process for producing Hydrolyzed Plant Proteins, are available to assist you in your formulations. Write for free samples and data to: The Nestlé Company, Inc., Bulk Division, White Plains, New York.

4-BE and 4BE-2 for BEEF FLAVOR
3H-1 for VEAL or PORK FLAVORS
3H-3 and 3H3-4 for FOWL or SEA FOOD
Available in Liquid, Paste or Powder Form

MAGGI's®

HYDROLYZED PLANT PROTEINS

Prepared by the makers of world famous **MAGGI's** *seasoning*

THE NESTLÉ COMPANY, INC.
WHITE PLAINS, N. Y.

This little old woman, who lives in a shoe,
Buys lots of food; good thing it's true
That foods protected with
SORBISTAT®-K
Stay fresher longer...this easy way!

TODAY A WIDE RANGE OF FOODS get the benefits of "freshness protection" thanks to SORBISTAT-K (potassium sorbate, Pfizer). By effectively inhibiting mold and yeast growth, SORBISTAT-K keeps food fresher—and extends its shelf life!

These are some of the products where SORBISTAT-K has proven highly successful:

• fresh fruit cocktails • high moisture cake batter • cake fillings and icings • fruit pie fillings • cheeses • fountain fruit syrups • chocolate syrups • prepared salads • pickles • dietetic jams and jellies • smoked and pickled fish • wine • dried fruits.

SORBISTAT-K is readily soluble in water. You can prepare up to 40% solutions for sprays, dips and metering. It has little or no effect on the taste.

New Improved SORBISTAT For Dry Mix and Oil Solution—Pfizer now offers SORBISTAT (sorbic acid, Pfizer) for applications where water solubility is not a factor. This improved form has an extremely low moisture content.

SORBISTAT is a free-flowing product that dissolves readily in oil and fat media and can be mixed easily in dry form with other dry food ingredients. Complete technical data on both SORBISTAT-K and SORBISTAT will be sent on request. Write today.

Science for the world's well-being

CHAS. PFIZER & CO., INC.
Chemical Sales Division
630 Flushing Ave., Brooklyn 6, N. Y.
Branch offices:
Clifton, N. J.; Chicago, Ill.;
San Francisco, Calif.;
Vernon, Calif.; Atlanta, Ga.;
Dallas, Texas;
Montreal, Can.

CIRCLE 21 ON READER SERVICE CARD →

OTHER OLIN PACKAGING PRODUCTS: CONTAINERS, BAGS, CELLOPHANE, POLYETHELENE, FINE PAPER
Write for Illustrated Brochure "The Olin Carton Service"

It takes more than paperboard to make

OLIN CARTONS

printing skills • modern equipment • resources • basic research • quality control • package design • dedication . . .

OLIN MATHIESON
Packaging Division
P. O. Box 488, West Monroe, Louisiana

POSITIVE SEAL. Cam Lock *compression* seal is an exclusive Jamison development that assures positive closure, minimum loss of refrigeration.

Fast, Automatic Electroglide® Door speeds freezer traffic, saves refrigeration

RAPID SMOOTH OPERATION—Assured by counter balanced weight of door and shock absorbing chain links.

• For safe frozen food storage at low operating cost, cold storage doors should open and close rapidly with no effort. That's why Electroglide —Jamison's new electric horizontal sliding cold storage door—is proving to be the practical, economical solution to problems of busy warehouses everywhere.

Photos Courtesy The Homfreez Corporation, Hackettstown, N.J.

Many exclusive Electroglide features—based on Jamison's 50 years of cold storage experience —assure safe, trouble-free operation.

Investigate the advantages of Electroglide. Write today for bulletin to Jamison Cold Storage Door Co., Hagerstown, Md.

JAMISON
COLD STORAGE DOORS

'3¢ Off' New FDA Target

Will the cents-off price promotion, which has drawn fire from FTC in the past, come in for more FDA scrutiny in the future? That's the teaser industry experts are mulling in the wake of FDA's seizure of about $500 worth of Lever Bros. "new light Spry" on a variety of charges.

Can labels that said "3¢ off" and "5¢ off" were false and misleading, according to FDA, because no regular price had been established. Defending their action, government lawyers say Food & Drug Act covers all misbranding, including price.

FDA complaint also claims the regular size 1-lb. can contains only 14-oz. of product, and regular 3-lb. cans only 2-lb., 10-oz. This is the result of the introduction of harmless nitrogen gas, which increases the volume without increasing product strength, the complaint adds.

In reply, Lever contends nitrogen is used in all shortenings, in whipped butter, and in many margarines in varying amounts. The company says its new product was marketed after use-tests by a research guidance panel and a consumer panel (of 800 homemakers) "showed a clear preference for 'light Spry' over shortenings with a lower nitrogen content."

Company also insists product weights are clearly stated on the label.

As FE went to press, Lever lawyers were huddling with FDA attorneys. FDA points out that in similar cases, a manufacturer can plead no contest and re-label the products to clear up what the government is complaining against.

Court Test On Ice Cream Rules?

Labeling rules of new Federal ice cream standards may end up in the court. While processors were cheered by authorized use of artificial vanilla, they're unhappy over provisions calling for prominent mention of synthetics on the package when used.

International Assn. of Ice Cream Mfrs. asked FDA to defer effective date of the standards (Oct. 25) as well as modify certain provisions considered to be unworkable. If agreement isn't reached, group may carry its case to a U. S. Court of Appeals.

Sugar Situation Settling Down

Stability is beginning to come back to the sugar market as processors adjust to the post-Cuban situation. USDA officials admit there have been complaints from users of direct-consumption imports who previously relied on Cuban supplies. And there's grumbling, too, from refiners forced to use raws from other countries, and from consumers who had to change from cane to beet sugar.

But raw prices fell toward the end of August from $6.70 to $6.40 per 100 lb., and are expected to stay in the lower range. Refined price is holding at a higher $9.70 level, but was not expected to go appreciably higher, and could creep downward.

Agriculture officials claim that, despite sanctions against Cuba, total allocation of purchases for direct consumption and of raw are same or higher than before re-allocation. They expect supplies to remain adequate, since reshuffle of quotas doesn't affect world supply, only the flow of sugar out of Cuba and into this country.

Department experts don't foresee any special problems next year, either.

Press Drive for 'Open Markets'

With overseas markets looming more importantly, processors are stepping up their fight against import restrictions by foreign countries. Food and beverage spokesmen, huddling with Commerce officials on forthcoming GATT meeting, stressed that high tariffs, import quotas, and outright prohibitions are "seriously handicapping" this industry.

Meat reps warned that developing Common Market is growing threat to U. S. firms trying to sell overseas. And canners complained that two European countries bar deciduous fruits from this country, and that two others have quotas although they enjoy unrestricted markets in U. S.

FTC Food Probes Roll Along

Chains are coming through with a "good response" to FTC questionnaires on ad and promotion allowances, commission reports. And, it adds, information "appears adequate."

Information is frankly intended to supply basis for possible action against chains or suppliers for violating rules against discrimination in allowances.

Meanwhile, phase two of the economic inquiry began with questionnaires being sent to frozen food packers. Results of this study, focusing on impact the concentration and integration of large buyers has had no freezers, should be out first of next year.

RR Rate Cuts Snagged

Railroad efforts to win back some food business by offering lower guaranteed rates are running into trouble. Under a guaranteed rate, a road offers special reductions if firm agrees to ship specified percentage (usually 90%) of its freight over the line.

ICC examiner, after patting the roads on the back for their efforts, then ruled guaranteed rates are illegal under anti-trust and ICC acts.

BRIEFS

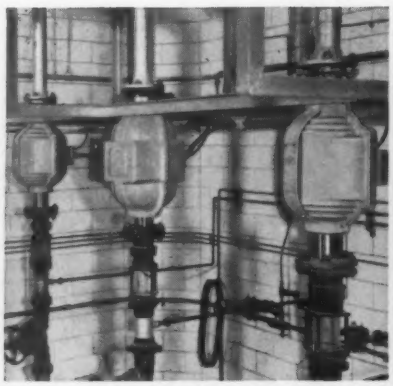
Grand jury indictment of seven Washington, D. C., soft drink bottlers on price-fixing charges may not reach the courts for another month or so because of crowded dockets. Action is rare for food industry—last two such cases occurred in '50 (canned evaporated goats milk) and '43 (tomato canners).

Food processors should start giving thought to purifying waste water, special Senate committee warns. Cleaning is no special problem, group concedes, since food plant waste water is oxygen-demanding type. But volume may be a headache if, as predicted, industry output doubles in next 40 yr.

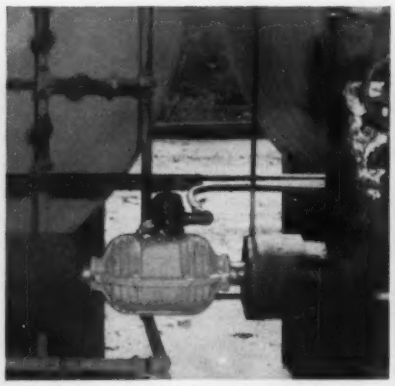
Emergency food planning committees are being formed by USDA at state and local levels to lay plans to meet food needs in case of national crisis.

(Continued, p. 26)

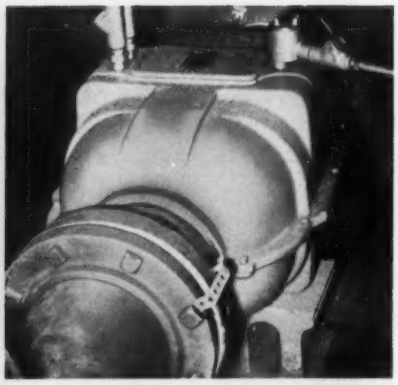
beer, starch, milk, coffee, the Foxboro Meter handl



Miller Brewing Company
uses Foxboro Magnetic Flow Meters to provide precise, automatic control of their flow to filters. Since Magnetic Meters have no flow restrictions of any type, they are cleaned "in place" by sending cleaners and ball brushers right through the line.



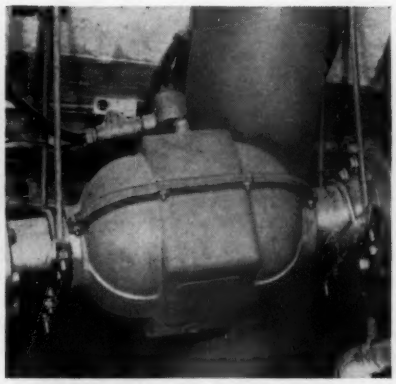
International Salt Co.
uses 6 Foxboro Magnetic Meters to measure 220° salt brine discharged from filters of Recrystallizer Process. Meters have corrosion-proof liners — give linear measurement, with an accuracy of ±1% of range across the entire scale. Meters are installed outdoors — need no protective housing.



Winebrenner Cannery
cut its town sewage tax by installing this 8 in. Foxboro Magnetic Flow Meter in effluent line. Town used to bill on basis of water consumption — now bills on flow meter readings. In canning season, when much water is shipped out with their products, savings are considerable.

molasses, juices, wastes... Magnetic Flow es them all

Ralston-Purina Company uses a Teflon-lined Foxboro Magnetic Meter to meter molasses into animal feeds. Flow rate is accurately controlled by Foxboro Dynalog Recorder-Controller shown above. Dynalog* instrument also provides instantaneous reading of flow rate, as well as a chart record of each 24-hour operation. *Reg. U. S. Pat. Off.*

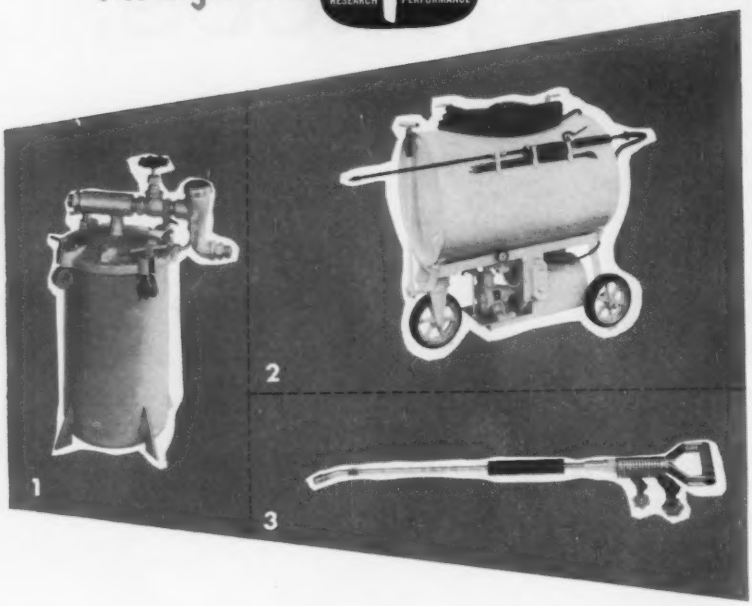


Anheuser-Busch, Inc. Corn Products Dept. installed Foxboro Magnetic Meters to meter starch slurry direct from storage to converter. Measurement is made by electrodes flush-mounted in meter wall. Meter accuracy is unaffected by changes in slurry density, temperature, pressure, viscosity or chemical composition.

Write for
Bulletin 20-14
The Foxboro
Company,
309 Neponset Ave.
Foxboro, Mass.

FOXBORO
REG. U. S. PAT. OFF.

The big PLUS SERVICE EXPERIENCE RESEARCH PERFORMANCE in Oakite



mechanized cleaning

–three ways to slash sanitation time and toil

The easier a cleaning chore is, the faster it goes; and the faster it goes, the less it costs. Mechanized equipment saves cleaning time, toil—and money. Check these three popular Oakite units for turning tough jobs into routine tasks.

1. **Oakite SANISEPTOR** operates off hot water line. Open the valve to cover surfaces with a jet stream of cleaning-sanitizing solution. Close the valve to rinse. Particularly effective for lighter duties.

2. **Oakite HOT-SPRAY UNIT** for heavy duty work blasts a pressurized spray of hot cleaning solution into equipment, onto floors, walls. Rolls through the plant carrying the cleaning solution with it. Cleans up to 12,000 sq. ft. in ½ hour.

3. **Oakite HURRICLEAN GUN** utilizes the force and heat of steam with the chemical action of modern detergents to remove heaviest soils in seconds. Light, cool, balanced. Swivel action nozzle directs solution at any angle with a twist of the wrist—even up and under.

The Big PLUS in Oakite

Consult the Oakite man on the *right* unit for your operations. He'll also advise on results of latest cleaning research . . . money-saving methods . . . materials with guaranteed quality. Or, send for Bulletin on mechanized cleaning. Oakite Products, Inc., 26G Rector Street, New York 6, N. Y.

OAKITE
over 50 Est. 1909 SCIENCE
years' leadership in industrial cleaning

Washington Report

Truckers Push Zero Code

Voluntary standards for truck-trailer shipments of frozen foods were drafted by American Trucking Assn.'s committee on perishables. Proposals will be submitted to Frozen Foods All-Industry Coordinating Committee which is trying to formulate zero codes for all segments of the frozens field.

Truckers' proposals call for insulation and refrigeration equipment that will hold long-haul cargoes at no higher than 10F, local shipments at a minimum of 25F. Draft also specified uninterrupted period of 2½ hr. for loading, with minimum temperature raised 2 deg. for each hour over that.

BRIEFS

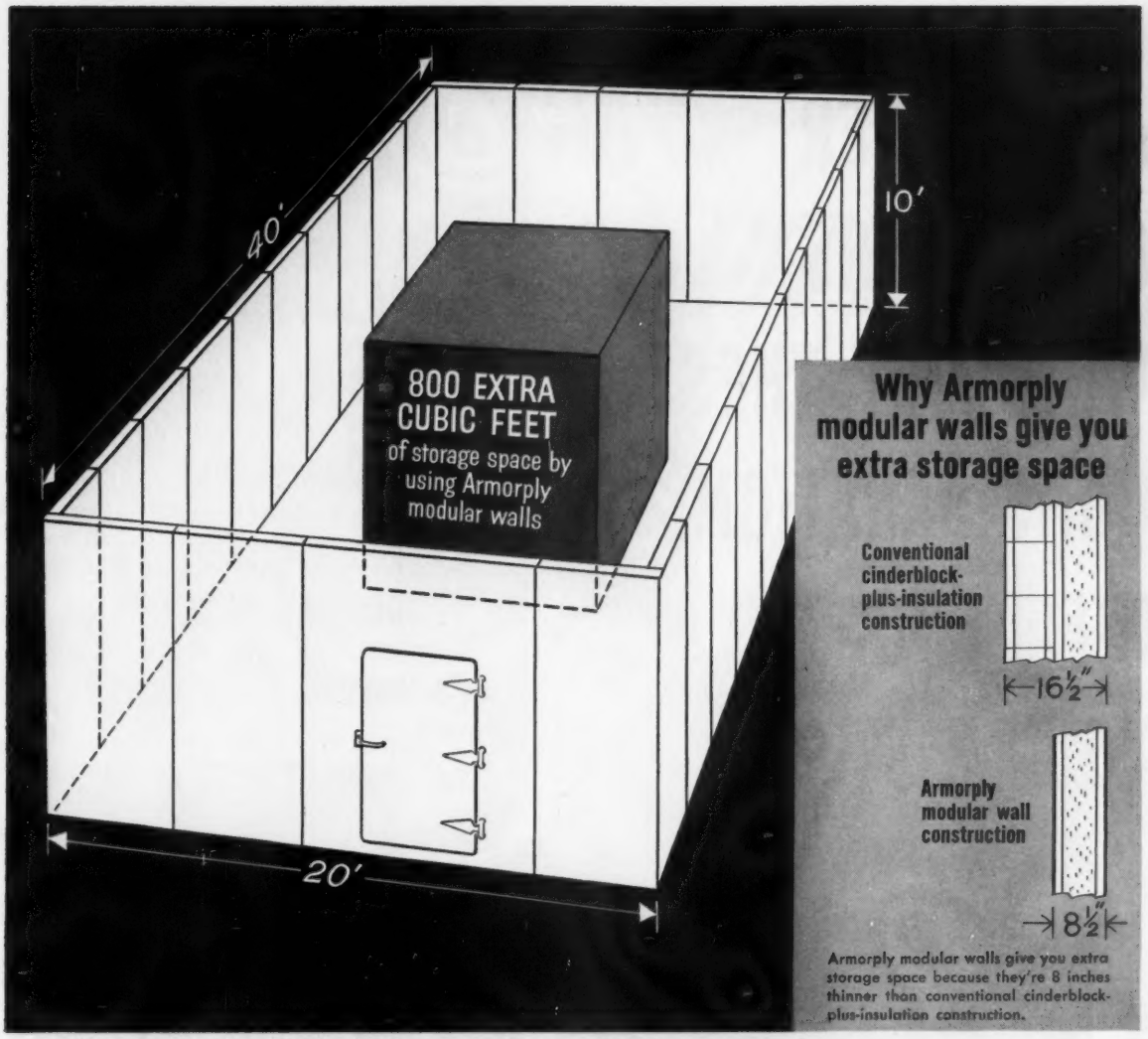
Higher food processing costs in Puerto Rico are likely, following Labor Dept. hearings on proposals to hike minimum wage. Current minimums: 60-85¢/hr.

Monthly report on radioactivity in milk, wheat, air, water, and other environmental factors is available to food firms. Write U. S. Public Health Service, Washington 25, D. C., for sample copy of "Radiological Health Data."

Inspection fees for processed fruits and vegetables were raised by USDA from $5 to $5.50/hr. Lot inspection and special analyses charges remain unchanged.

Internal Revenue Service agents, armed with tax records, are making block-by-block, business-by-business canvass of smaller firms. Many small businesses, they point out, aren't aware of different taxes they must pay—such as business income, employer's social security, withholding, excise, etc. Check your lawyer to see if your files are up to date.

USDA's long-awaited convenience foods study won't be out for several months, officials told FE. Department is analyzing food and nutrient content of some 300 types of vittles, as well as the spread between retail and farm prices. Foods have been grouped into three types of meals—1) homemade (prepared in kitchen from processed and packaged ingredients), 2) prepared, and 3) "edible as purchased" (fully-prepared, so-called carry-out dinners).


40'
10'
800 EXTRA CUBIC FEET
of storage space by using Armorply modular walls
20'
Why Armorply modular walls give you extra storage space
Conventional cinderblock-plus-insulation construction
16½"
Armorply modular wall construction
8½"
Armorply modular walls give you extra storage space because they're 8 inches thinner than conventional cinderblock-plus-insulation construction.

In this room the space gained represents an extra 10% capacity. Smaller rooms provide proportionately greater space gains—13%, for example, in a 20' x 20' x 10' room. And there are comparable savings in higher temperature rooms.

More usable freezer storage space—with Armorply modular rooms

Indoors or out, in any sized freezer room at any required temperature, you gain many valuable cubic feet of usable storage space with Weldwood® Armorply® sectional walls—because they're so much thinner than ordinary cinderblock-plus-insulation construction. Yet the superb insulating and reflecting properties of Armorply modules let you maintain constant temperatures as low as −100°F, making it easy and economical to comply with new sub-zero storage standards.

Armorply rooms go up fast and easy. They need no costly masonry, no complex foundation. Just erect them on concrete slabs. They create no mess and assemble fast, too—because Armorply modules, as prefabricated by the Freezer Box Division of the Annapolis Yacht Yard, Annapolis, Md., have a patented, joint-locking device which makes for easy joining and eliminates sealing problems. This simple construction and fast erection mean a low total cost. Also make it easy to expand or move an Armorply freezer room.

Long-range benefits, too. Armorply metal-faced plywood modules require no painting, no maintenance. They're resistant to water, dirt, and vermin. Armorply modules come faced with aluminum, stainless steel, or zincbond steel. For a free sample and full details mail the coupon today.

Weldwood Armorply Metal-Clad Plywood

PRODUCT OF UNITED STATES PLYWOOD

SEND FOR FREE SAMPLE

Engineered Products Department FE 9-60
United States Plywood
55 West 44th Street, New York

☐ Please send me a sample of Armorply and the descriptive booklet #2133 on Armorply cooler and freezer rooms.

☐ Please have a Weldwood representative call with full details.

Name.....

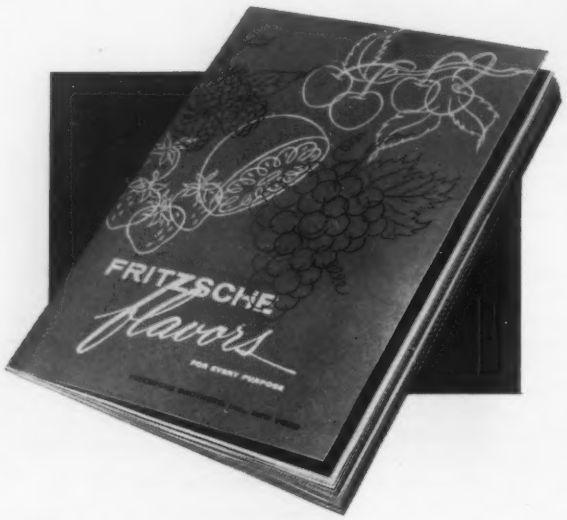
Firm.....

Address.....

City.....Zone.....State.....

AS A BUYER OF FLAVORS, WHICH OF THESE CONSIDERATIONS INFLUENCES YOU MOST?

1. QUALITY AND SUITABILITY OF FLAVORS
2. REPUTATION—INTEGRITY OF SUPPLIER
3. TECHNICAL SERVICE
4. ECONOMY—COST
5. PROMPTNESS OF DELIVERY
6. RELIABILITY OF SUPPLY
7. COMPLETENESS OF LINE



If we are to accept the evidence of various surveys, most of the basic considerations that influence buyers in their choice of purchases are shown in the above list – and in their approximate order of importance. We must assume that flavor buyers are no exception – that they, too, regard quality, reputation and the advantages of reliable technical service as determining factors in their purchasing decisions. These, of course, are the assured advantages to those manufacturers who rely upon FRITZSCHE as their major source of sales-stimulating flavors. Prompt delivery, reliability of supply, completeness of line, and fair pricing policies – these, too, are considerations favorable to all who use this informative, easy-to-refer-to FRITZSCHE CATALOG (illustrated) as their guide to better flavors. A copy is yours upon request.

FRITZSCHE BROTHERS, Inc.

A FIRST NAME IN FLAVORS SINCE 1871

76 NINTH AVENUE NEW YORK 11, N. Y.

Branch Offices and *Stocks: Atlanta, Ga., Boston, Mass., *Chicago, Ill., Cincinnati, Ohio, Greensboro, N. C., *Los Angeles, Cal., Philadelphia, Pa., San Francisco, Cal., St. Louis, Mo., Montreal and *Toronto, Canada; *Mexico, D. F. and *Buenos Aires, Argentina. Plants: Clifton, N. J. and Buenos Aires, Argentina.

A NEW HIGH...IN VALUE
A NEW LOOK...IN STYLING
A NEW LOW ...IN PRICE

AUTOMATIC'S Gas Operated LIFT TRUCKS

VALUE PLUS—Automatic's simplified power package offers the ultimate in high operating efficiency, low cost of operation, and maximum safety. A gas engine and variable voltage generator, precisely matched, supply exact power to the electric drive motor...no clutch or hydraulic torque converter to cause trouble or worries. Here are a few of Automatic's plus value features:

- Operates on 25 to 30% less fuel
- 50% longer hydraulic pump life
- Oversize brakes last up to 30% longer and are adjustable without removing wheels
- Longer-life, advanced-design roller mounted uprights
- Ventilated exhaust dispels fumes
- New 3-way adjustable seat increases driver efficiency—reduces fatigue

MODERN STYLING—New orange and blue color combination. Automatic's new special high visibility safety orange adds another safety plus feature to your plant, while its new royal blue color accentuates the truck's low center of gravity and high stability.

THE PRICE IS RIGHT—No longer a premium-priced truck, but priced competitively with trucks which use hydraulic torque converters.

CAPACITIES: ▲
3,000 to 10,000 lbs.
with cushion tires.

CAPACITIES: ▶
3,000 to 8,000 lbs.
with pneumatic tires.

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125 West 87th Street, Dept. PO, Chicago 20, Ill.

FIRST IN IMAGINATION
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LEARN MORE ABOUT AUTOMATIC'S COST-CUTTING LIFT TRUCKS

Please send me complete details about Automatic Gas-Operated, Electric-Driven Lift Trucks, in capacities of_____lbs._____lbs._____lbs.

NAME_____
FIRM_____
ADDRESS_____
CITY & ZONE_____ STATE_____

NEW PACKAGES & PRODUCTS

Howard Johnson's Pies in Pouches

Frozen Chicken Pot Pie Filling, plus a variety of other Howard Johnson's products, are now being sold in tear-open "envelope" pouches.

Two basic types are in use. First (left) is a foil-paper-polyethylene combination, which uses bright side of foil to produce sturdy point-of-purchase appeal.

Transparent pouch (right) is made of 50-ga. Dupont Nylar and 2½ mils of polyethylene, providing see-through convenience for consumer.

Both bags are 2-color flexographic on front and back panels by Rap-In-Wax Co.

Circle 401 on Reader Service Card

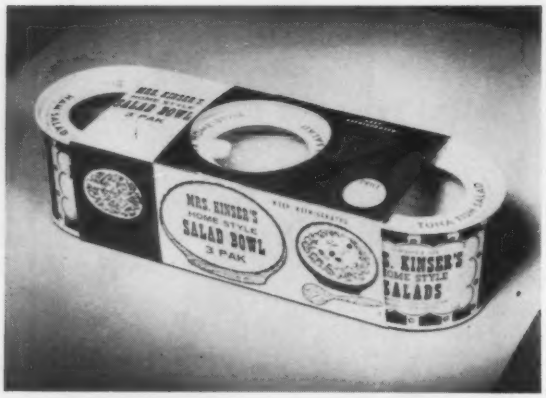
Wraps Boost Frozen Shrimp Sales

Sales are reported up nearly 50% for Rose Frozen Food Corp.'s Qik-Fry Breaded Shrimp and Qik-Fix Salad Shrimp after introduction of custom Cello-Sealtite carton overwraps.

Seven-color wraps are combination of reverse printed cellophane wax laminated to 8½# tissue. Fanciful serving vignettes on each wrap and over-all package designs are invulnerable to handling wear.

Package supplier, Milprint, also claims nature of wax lamination facilitates heat-seal wrapping on automatic equipment. Converters report wraps running at speeds up to 125/min.

Circle 402 on Reader Service Card



See-Through Multipack for Multisales

Marketed throughout the South by Mrs. Kinser's Home Style Foods, Inc., is this multiple package providing supermarket shoppers with a view of three assorted salads.

Can Band package's inner flaps lock the 8-oz. tapered cups securely against customer tampering, but still provide quick product identification for speedy shoppers.

Band is also used to promote "Salad Bowl" point-of-scale copy and illustrations of copy in use. Spoon "bowl" provides pricing space.

Container Corp. of America supplies the multipack band package.

Circle 403 on Reader Service Card

Wirebound Box for Turkeys

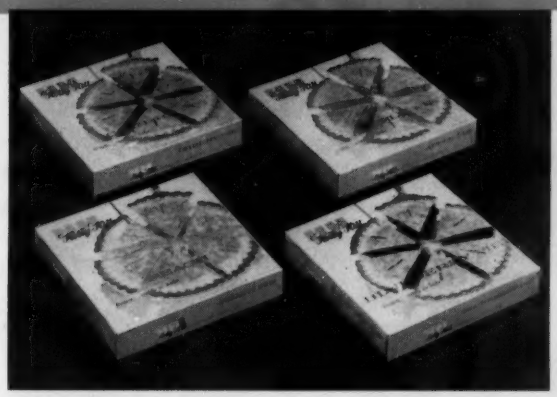
Shipping container for frozen turkeys is reported to overcome weaknesses of conventional containers and allow safe, high stacking under high humidity conditions.

"Wirebound 'T' Box" is actually two containers in one: an open top corrugated tray and a separate 4-section wirebound wooden wrap-around (with a corrugated panel pre-stitched to one section).

Unit, developed by Package Research Lab, Rockaway, N. J., fits blast freeze and liquid freeze operations, and present handling practices.

Box is expected to be competitive in price with many conventional frozen turkey boxes.

Circle 404 on Readers Service Card



Pictorial Series for Frozen Pies

Fresh approach used in pictorial printed cartons for Holly Foods frozen pies features unique illustration of whole pie cut into wedges to display colorful filling.

Result is strong brand as well as product identification. For added versatility, stock series can be varied by eliminating sections of pictures. Background can also be re-designed.

Cartons for Navarre, Ohio, firm are printed in vivid, full-color lithography on "Ultra Cote 80" board with "Crystal-Cote" finish.

KVP Sutherland Paper Co. is supplier.

Circle 405 on Reader Service Card

'Saddled' for Party Appeal

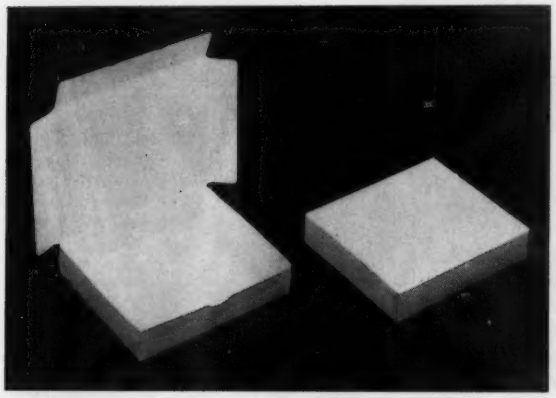
Bold color treatment and light, humorous handling of brand name has given a fun and party image to candy packages from Family Treats Div. of Glen-Brook Food Distributing Co., Akron, Ohio.

Using only 2 x 6-in. saddle space, designers have backed up seasonal holiday promotion by adding simple but obvious symbols such as the Jack-o-lantern for Halloween, Easter Rabbit, and Christmas wreath.

As candy is easily identifiable through film bag, product names are left off in favor of emphasizing brand and background.

Smith, Scherr & McDermott, Akron, is designer.

Circle 406 on Reader Service Card



Introduce Wrapless Carton

Diotite, a heat-sealable, rigid carton that requires no overwrap, is getting its first tryout at Dulany Foods.

Cartons delivered flat to a packer's plant and completely handled with fully-automatic set-up and closing equipment.

Bellows corners are claimed to minimize moisture penetration and eliminate pinholes. Extra thin board is used since there are no slots to weaken construction.

Supplier, Continental Can Co., says new container can be used at a cost equal to or slightly lower than present packaging expenditures. At present, Dulany is using it only for specialty items.

Circle 407 on Reader Service Card

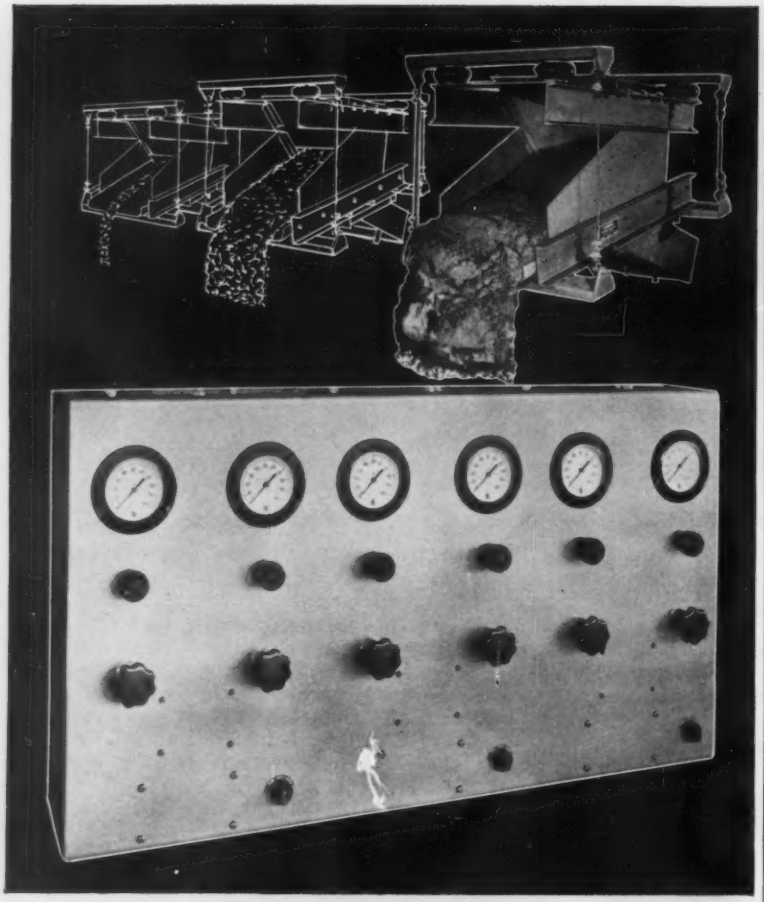
First Fish Item for Morton

A Fish 'N Chips dinner, featuring crisp fried fish, tender green peas with butter, and crinkle cut French Fried potatoes, has been introduced by Morton Frozen Foods Div. of Continental Baking Co.

Backing up new item is a tab-opening carton designed for maximum marketing effectiveness via a vivid, realistic photograph of complete, tempting dinner as it would come from the oven.

Familiar Morton logo and face of "Colonel Morton" complete pictorial design, which is reproduced by 4-color offset lithography in Fidel-I-Tone fine screen process by Lord Baltimore Press. Carton features Thermo-Stik sealed end panel.

Circle 408 on Reader Service Card



From a TORRENT to a DRIBBLE... AMPLITROL means precise control

With Carrier Amplitrol Feeders you can control discharge rates from ANY distance. Carrier Feeders give you precise manual OR automatic control in response to signals from bin-level indicators, process-alarms, scales, load cells, ball mill or crusher drives.

Speed and Accuracy Combined
Three separate Amplitrol Feeders are controlled simultaneously with the control panel shown above. Used in a batch weighing system, the controls produce a fully adjustable high-low feed rate cycle for each feeder. For maximum batching speed with minimum batch variation, Amplitrol feeds the major portion of a batch at torrent rates—the remainder at a dribble. Shutoff at proper weight and recycling is automatic.

For more information, write Carrier Conveyor Division, CHAIN Belt Company, 215 North Jackson St., Louisville 2, Ky.

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COOL • DRY
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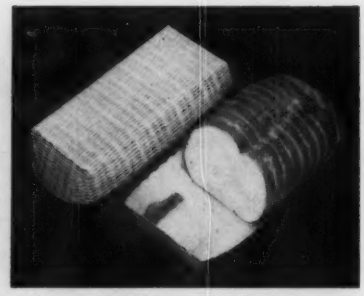


FOIL-LAMINATED Pak-A-Pan trays from Marathon allow housewives utility of preheating Italiano bread from Awrey's Bakeries, Detroit. (410)

Packaging Briefs

Multiwall shipping sacks from Chase Bag Co. feature separate, intermediate ply of light-weight polyethylene, spot-pasted to adjacent layers of heavy duty kraft paper. (409)

Polyethylene bags from Dobeckmun are being used by American Crystal Sugar Co. for consumer eye-appeal, free-flow, and reduced breakage of 5-lb. sugar sales. (411)

High wet strength, absorbent paper (code 544) is introduced by Paterson Parchment Paper Co. as an inner sheet for pork product wrappers. (412)

Black Bottom Foil Pan, which eliminates soggy crusts, improves flavor, and decreases baking time, has been introduced by Ekco-Alcoa Containers. (413)

End Labels for bread packaging (Crown Seal by Western-Waxide Div., Crown Zellerbach Corp.) require only about 150F., approximately 40F. lower than needed by other heat-seal end labels. Suitable for polyethylene and cellophane, label remains tacky after opening and numerous reclosures. (414)

New Products Shorts

Space Wheels, an 8-oz. package featuring "Macaroni X-99," is being introduced by V. La Rosa & Sons.

Frozen Apple Dumplings, packed 4 servings to a package, are being marketed by Blue Star Foods, Inc., Council Bluffs, Ia.

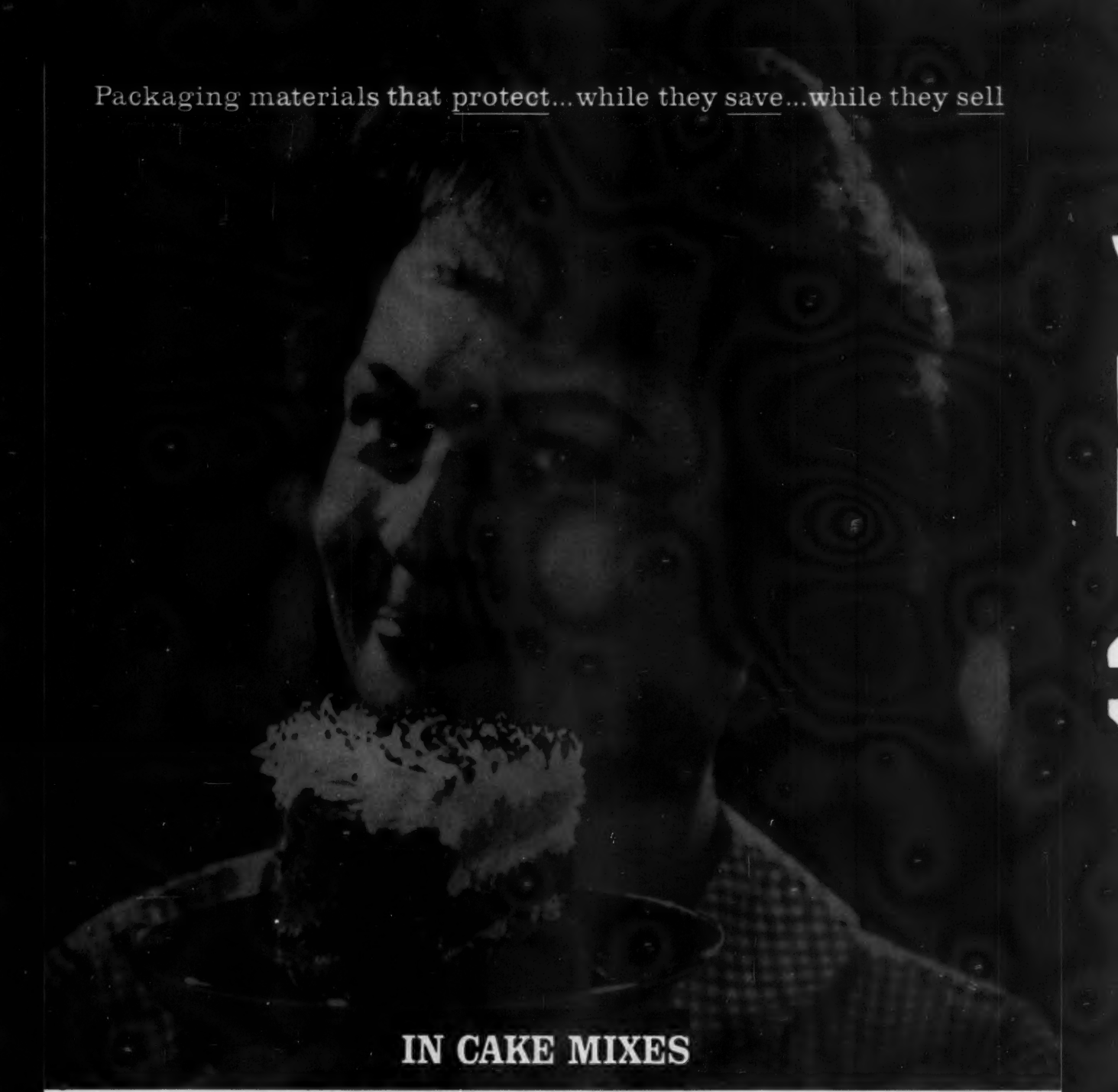
Oven Ready Scalloped Potatoes are latest in instant line from R. T. French Co.

Shrab, shrimp stuffed with deviled crab and covered with dairy butter, is new frozen seafood item from Neptumalia Seafood Co., Thunderbolt, Ga.

CIRCLE 32 ON READER SERVICE CARD

CIRCLE 33 ON READER SERVICE CARD →

Packaging materials that protect...while they save...while they sell



IN CAKE MIXES

Six of the eight leading manufacturers of cake mixes are *regular* users of Riegel protective packaging materials. Their long experience with Riegel has given them faith in Riegel's technical leadership and performance in delivering the *right* papers for widely varied products. This confidence is demonstrated by sales leaders in *many* fields . . . good reason why you too should know Riegel.

6 OUT OF 8 BUY Riegel

To assure just the right combination of product protection, machine efficiency and low cost packaging for *your* products, Riegel offers more than 600 different materials . . . standard or tailor-made. Pouch papers, paperboards, glassines, foils, films . . . laminated in various combinations . . . plastic-coated or waxed . . . printed or plain. Write to Riegel Paper Corporation, 260 Madison Ave., New York 16.

DOW | INSULATION

Mr. Harry Schreckinger, senior partner of Globe Cork, inspects Chock Full O' Nuts' new commissary freezer (background).

CHOCK FULL O' NUTS TURNS OVER ALL COLD-ROOM PLANNING AND CONSTRUCTION TO AN APPROVED INSULATION CONTRACTOR

"Globe Cork Insulation Company—a Dow Approved Insulation Contractor – assisted with the planning and construction details of the new 13,000 cu. ft. refrigerator in our commissary. This freed our own design departments for other work in expanding our coffee plant and bakeries," says Mr. Samuel Ostrove, V.P. of Chock Full O' Nuts, New York restaurant chain.

"Globe also helped plan and build other refrigeration and freezing units in our commissary and in two of our new restaurants. We told them what units we needed and how big they should be. Globe did all the rest—installation and supervision – using Styrofoam® insulation, which keeps our refrigeration rooms at a constant 35° F., and our freezers at an even ten below."

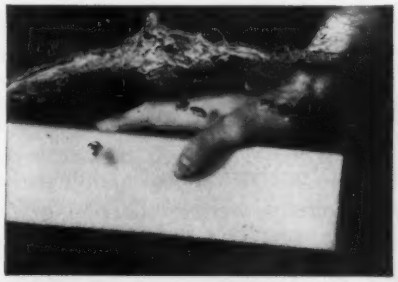
Globe Cork relies on Styrofoam* because this low-cost insulating material is durable, has a low "K" factor that *stays* low, and does not attract vermin—a vital consideration where food is involved. In addition, lightweight Styrofoam is so easily handled that installation costs are minimized.

Styrofoam contains millions of tiny, non-interconnecting air cells which provide high resistance to water and water vapor. Water doesn't penetrate, to freeze, swell and crack the insulation. Insulating efficiency stays high over years of service, regardless of humidity.

The man who displays this seal is a Dow Approved Insulation Contractor. He's one of the special group of low-temperature insulation contractors selected by Dow for their experience and abilities. Each of these contractors has an excellent business reputation, based on high quality workmanship; and each takes great care to follow Dow recommendations for installing Styrofoam.

There's an Approved Insulation Contractor near you. Contact him when you next plan to install low-temperature insulation. He'll provide invaluable assistance at every step in the operation. For the names of Approved Insulation Contractors near you, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1641KE9.

**Dow's registered trademark for its expanded polystyrene.*



The closed cell structure of Styrofoam controls the passage of heat, water and moisture, providing permanent insulating efficiency. Cold rooms stay uniformly cold, easing the operating load on refrigeration equipment.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

See "The Dow Hour of Great Mysteries" on TV.

A STARCH SPECIALTY

BATTER-BOND

FOR BREADING MEAT, FISH, FOWL

DOESN'T CRUMBLE • DOESN'T FLAKE • DOESN'T BLISTER

BATTER-BOND anchors breading firmly. Permits moisture evaporation without blistering or flaking. Reduces excessive penetration of frying oil. Continues to hold throughout frying, freezing and refrigeration.

BATTER-BOND is easy to use. Mix it with water and seasonings. Dip food in mixture. Roll food in breading. Then freeze or fry.

BATTER-BOND is recommended for all breaded foods: fish sticks, cakes and fillets, shrimp, veal cutlets, fowl, egg plant, onion rings, etc. Contact your nearest National office for full information.

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750 Third Avenue, New York 17 • 3641 So. Washtenaw Avenue, Chicago 32 • 735 Battery Street, San Francisco 11

And All Principal Cities in the United States, Canada, England and Mexico

Wanted—More Revolution-Minded Food Executives

Competition turns the wheels of industry. The trick to successful management lies in sizing up the nature of tomorrow's competition and making plans, today, for converting it to one's own advantage.

While the Sixties have been broadly touted as a golden future for the food industry, they're not a blank check by any means. For, like the decade just ended, the Sixties will unfold some revolutionary challenges (on both the food-making and food-selling fronts) which will mold the food industry into something different from what it is today.

Competition Takes New Shapes

What are the competitive challenges at the food-making level? Here are some new types of processors you'll be selling against:

1. Firms from the outside that are attracted by the industry's relative profit stability.
2. Farm groups integrating forward in the effort to get a bigger chunk of the retailer dollar.
3. Chain-store groups integrating backwards to cut costs.
4. Restaurants seeking to build on their "captive" markets with brand franchises in supermarkets.
5. Institutional feeders out to capitalize on the expanding market represented by school and factory cafeterias.

Changes will be sweeping on the "customer" front, too. Such as:

1. Drive by more non-food outlets (discount houses, department stores, and now, mail-order houses) to take on food products as traffic-builders.
2. Growing importance of the institutional market as Americans eat more of their meals away from home.
3. Possibilities presented by automatic vending.
4. The tremendous opportunities of international marketing as rising personal income and stepped-up industrialization overseas create the same environment that nurtured the rise of factory-made foods in this country.

Marketing's Lengthening Shadow

What does all this have to do with you? Just this: What goes on outside your plant will, more and more, decide what takes place inside your plant. **All these newer types of manufacturers will be fighting to lure your customers away from you. And the fluxing trends on the retail end will decide whether there are enough buyers for your product.**

Put another way, food industry management in the Sixties will have to answer to the challenges of the Marketing Revolution just as it—very successfully—met the demands of the Technological Revolution of the Fifties. Management must, of course, keep up with techniques of continuous processing, quality control, materials handling, and packaging. But in this decade it must focus special attention on new methods of organizing for new product development, finding out what motivates consumer buying, evaluating advertising effectiveness, and gaging market demands.

The Marketing Revolution won't lessen the importance of the food technologist or engineer. Nor will it minimize capital expenditures for higher efficiency. Low-cost operations and top-flight product quality are essential factors in the Marketing Revolution.

But it does mean, as FE first recognized three years ago, more open communication lines between the vital areas of food management—production, engineering, marketing, and R&D. None of these special areas can afford to operate in a vacuum. The risks are too great. The need for collective judgment too pressing.—T. C. T.

LOOKING FOR A LOW-COST APPROACH TO MAINTENANCE PAINTING?

Lou Oyster's an old-timer in the field of maintenance painting. A member of Du Pont's special Technical Service Group, Lou's an expert whose aim it is to help you solve maintenance painting problems of every type and size. As he sees it:

"To make sure you realize maximum returns on every maintenance dollar spent for paints and painting, think in terms of *CPSFPY*—cost per square foot per year—rather than cost per gallon. *CPSFPY*—Du Pont's approach to paint maintenance—brings in two additional factors of equal importance: *service* and *job satisfaction.*

"You see, when you specify Du Pont, you're getting a complete paint *system,* specifically geared to your needs. Naturally, we start with the finest finishes available—like our Mildew-Resistant Enamel, for instance. This tough, durable finish effectively resists mildew formation and stays bright for years. Like all Du Pont Maintenance Paints, it's pre-tested to assure dependable performance.

"Teamed with top-quality paints is what we call technical assistance. This means going right into your plant to analyze the problem at firsthand. Once done, we can sit down with your engineers and plant supervisors and draw up a sound, workable program that considers both maintenance and budgetary requirements. Service like this helps you achieve efficient, long-range protection, *at lowest cost per square foot per year.*"

There are men like Lou Oyster working out of Du Pont district sales offices from coast to coast. Why not let one of them put his training and experience to work for you? Give him a call, or write: E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Dept. FE-69, Wilmington 98, Delaware.

* * *

Lou Oyster has had more than 30 years' experience with Du Pont's Finishes Division. His diverse background in the field of maintenance painting includes extensive experience in mildew control, sanitation and corrosion problems for the dairy, meat-packing, cereal, chemical, petroleum and paper industries in the South and Midwest.

DUPONT PAINTS

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BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

A winning team

needs a "strong bench". When you buy Duraglas containers or their closures from Owens-Illinois, you acquire the rights to a "strong bench" of technical and merchandising skill.

On call are specialists in designing packages and making them perform efficiently in your plant and where your products are sold.

Ask your Owens-Illinois salesman. Call him at your nearby O-I office or write Owens-Illinois, Toledo 1, Ohio.

DURAGLAS CONTAINERS
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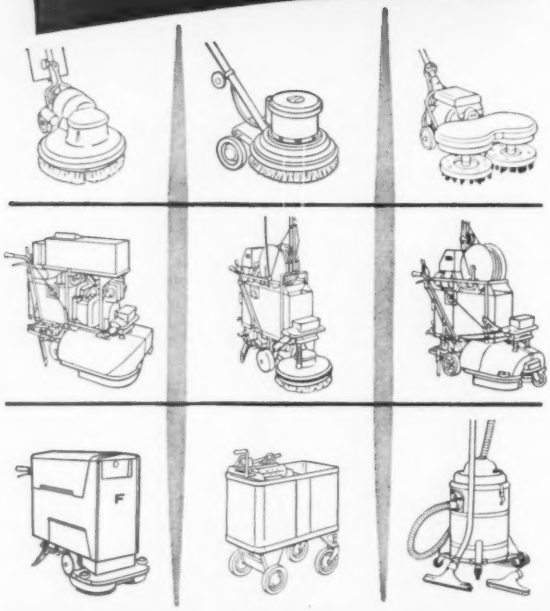
Keep your floor-maintenance men happy . . .

with *Job-Fitted* EQUIPMENT!

Choose from the COMPLETE *Finnell* Line

More than a score of models and sizes permits selection of the equipment that's exactly right for your job!



However much a maintenance man may want to do a good job, and at the same time show savings in labor costs, he's *stymied* if the machine is too small, or too large, or is otherwise unsuited to the job. Different floors and areas call for different care and equipment. That's why *Finnell makes more than a score of floor-maintenance machines.* From this complete line, it is possible to choose equipment that is correct in size as well as model . . . that provides the maximum brush coverage consistent with the area and arrangement of the floors.

Finnell offers *Conventional Polishing-Scrubbing Machines* in both concentrated and divided-weight types, each in a full range of sizes . . . a *Dry-Scrubber,* with self-sharpening brushes, for cleaning grease-caked floors . . . *Combination Scrubber-Vac Machines* for small, vast, and intermediate operations, including self-powered (gasoline, propane, and battery) as well as electric models . . . *Mop Trucks* . . . a full line of *Wet and Dry Vacuum Cleaners, Attachments,* and *Accessories.* In addition, *Finnell* offers *Cleansers, Sealers,* and *Waxes* of every requisite type . . . *Steel-Wool Pads* and other accessories — *everything for floor care!*

In keeping with the *Finnell* policy of rendering an individualized service, *Finnell maintains a nation-wide staff of floor specialists and engineers. There's a Finnell man near you* to help solve your particular floor-maintenance problems . . . to train your operators in the proper use of *Finnell Job-Fitted Equipment and Supplies* . . . and to make periodic check-ups. For consultation, demonstration, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 5709 East Street, Elkhart, Indiana. Branch Offices in all principal cities of the United States and Canada.

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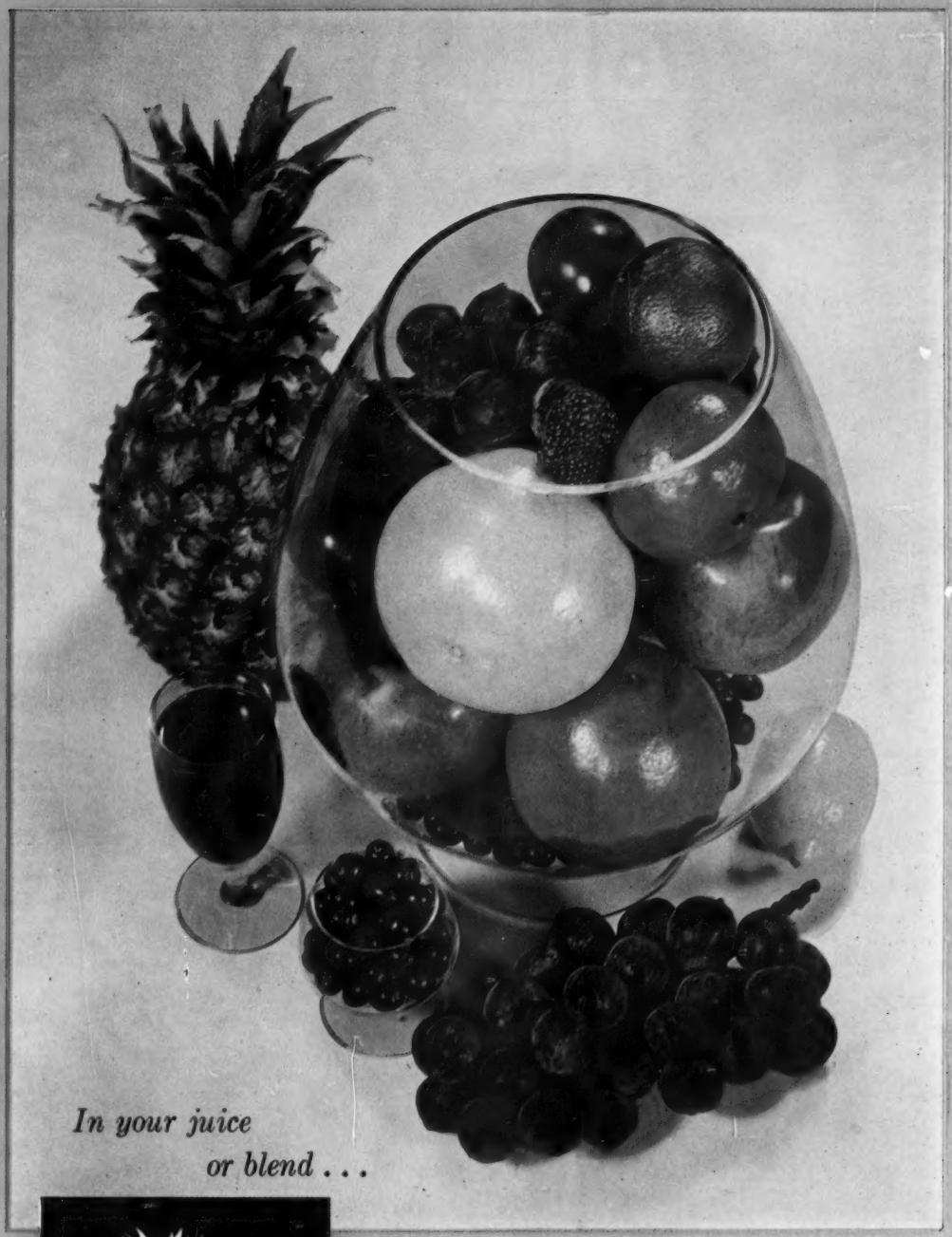
BRANCHES IN ALL PRINCIPAL CITIES

Keep Faith with Nature—Guard her Goodness



In your juice
or blend . . .

STANDARDIZE—*don't jeopardize*

Nature never standardizes the vitamin C content of fruits. Nature's never uniform. Uniformity varies. So *standardize*—don't jeopardize—juice uniformity!

Standardize on juice excellence, with Roche® vitamin C (ascorbic acid). Capitalize on quality. Give fruit juices and blends: acceptable vitamin C levels, ripe-fruit-flavor richness, a nutritional claim for your labels.

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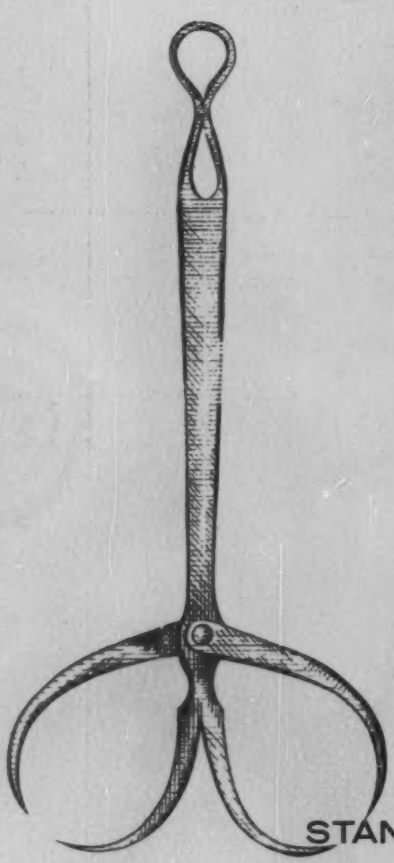
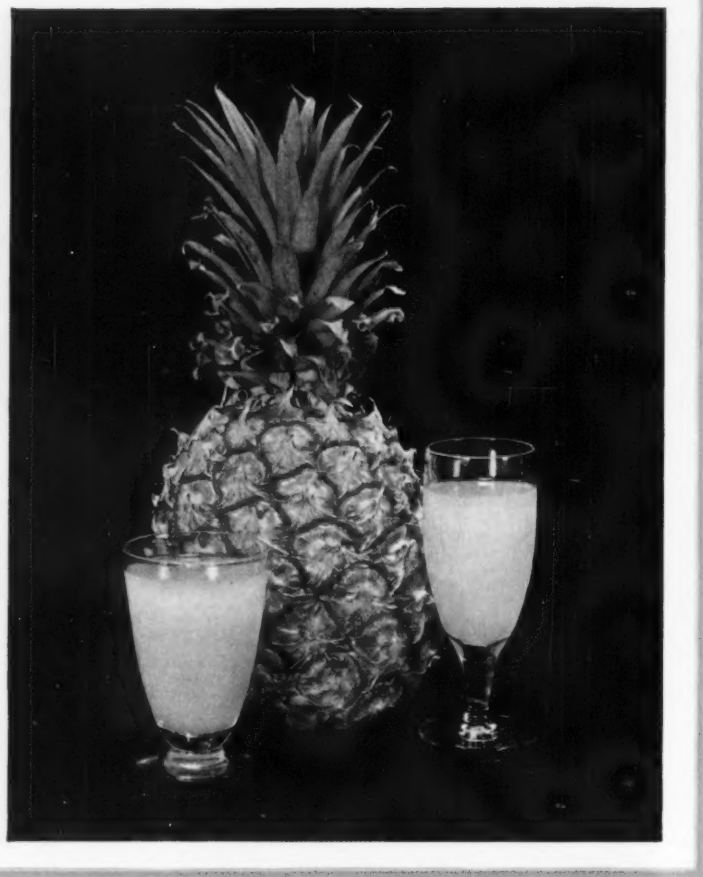
Keep Faith With Nature—Guard Her Goodness

In your juice or blend . . .





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©1960 HLR INC. FINE CHEMICALS DIVISION **HOFFMANN-LA ROCHE INC.** Nutley 10, New Jersey

BLUEPRINTING DEVELOPMENT of executive personnel to better present efficiency and fill future needs are four top Campbell decision-makers. V.P.'s joining in this "pursuit of excellence" are (l-r) A. Pifko, General Plant Manager; E. J. Foltz, Personnel; G. W. Crabtree, Operations; and E. M. Nuckols, Administrative Services.

Campbell's **MDP** *Builds—*

Tomorrow's Executives Today

Management Development Program prepares top-flight personnel to backstop present decision-makers and fill future needs at Campbell Soup Co.

THE COMPANY is people. People make the company.

And Campbell Soup Co.'s continuing position as one of the top ten food manufacturers in the nation has been ably supported by a management program geared to the development of excellence in people as well as products.

Better organization, higher morale, improved efficiency, and consequently, added profits, are the goals of modern personnel development at Campbell's.

And top executives like Pres. William B. Murphy, Personnel V.-P. Edwin J. Foltz, and others can look with pride at the latest employee attitude survey, knowing that a sharp executive development program had a hand in creating its present image.

Employee inventory (see chart) shows that the attitudes of Campbell personnel in 15 categories are almost all well above average in comparison to all industry. Survey, designed by impartial Science Research Associates and conducted by Rutgers University, also points up the significant changes in attitude between studies made in '52, '54, and '59.

Firm's present program, an out-

JACK L. MISCHOU
Assistant Editor, "Food Engineering"

TALKING IT OVER with an MDP employee are Personnel V.-P. Ed Foltz (left) and Employee Selection and Development Manager R. K. Bard (center). Periodic reviews are aimed at bringing personnel along as fast as his abilities will permit via special training, relocation, or other means.

growth of previous training operations, is now in its fourth year. Contributing heavily to its growth and present worth are President Murphy and Ed Foltz, a former administrative assistant to FBI-chief J. Edgar Hoover.

Recognizing that change and survival are literally synonymous, Campbell executives knew that the firm should have the best possible program able to turn out the type of men needed to match today's increasingly competitive market. V.-P. Foltz found that all really good programs were tailor-made to fit a particular company, and what was good for one firm was not necessarily good for another. In addition, the better programs appeared to be expensive and/or extremely difficult to administer.

Most obvious to Foltz was the fact that a successful management program must be tied in with the whole personnel operation. And its primary purpose must be not only the continuous improvement of personnel in their present positions, but also the development of these employees to meet future company needs.

Here are the four fundamental elements of Campbell's MDP (Management Development Program):

1. Planning needs to obtain the most effective organization both today and in the years ahead.

2. Reviewing and evaluating present employees.

3. Developing employees to fill future personnel requirements.

4. Identifying personnel with outstanding potential and making special plans for their development.

Emphasizing the need for "backstopping" present management and readying personnel for the future is President Murphy, who says: "To have a man competent to run a new plant means that this man should have experience in a number of departments of our business, be the type of man who can supervise and inspire other people, and be able to adapt himself to new situations and environments. He must also be a man who is completely loyal to the company and meets our standards of leadership.

"To prepare this man may take 4-5 yr. and this preparation must be done, in many cases, without his knowledge. As a matter of fact, we are training people for an expanded business without having set their ultimate positions."

And MDP is the method Campbell's implements to carry out this operation.

Proof of Progress

Here's some of the tangible results either wholly or partially stemming from the Campbell program:

... Over 94% of management appointments throughout the company have been from within.

... Monthly salaried rate of turnover has continually decreased and is now much lower than industry averages. Over 53% of the men in MDP have been with the firm 10 yr. or more.

... Percentage of employment offers that have been accepted is much higher than other major companies surveyed.

... Company-wide percentage of personnel considered promotable has increased over 10% during the past 2 yr., and the number considered unsatisfactory has decreased significantly.

... Unsatisfactory employees have been identified early in their careers and appropriate action taken before acquiring long seniority.

... Coordination of employee rotation between different areas of the business has been strengthened.

And on the corporate level, program has proved effective in making multiple company-wide changes benefiting several employees rather than single changes affecting only one plant.

MDP proved most valuable in staffing new Campbell plants at Napoleon, Ohio, and Chestertown, Md., and in the reorganization of firm's frozen food plant operations. The same effective utilization will be made in staffing future plants and Campbell's growing international operations.

Also important in today's impersonal industrial environment, Campbell management people are talking about "their" department and "the development of their people." Thus, the image of corporate structure is positive rather than negative.

Working Points of MDP

Under the total personnel program's four elements there are at least four separate occasions each year when a given future manager's performance and position in the company are reviewed:

First, in connection with the program actually termed Management Development; second, during the Performance Review Program; third, in conjunction with the Salary Administration Program; and fourth, during the Review of Candidates for Special Training.

Now, let's examine the mechanics of evaluation employed in the most important area of the total operation—the Management Development Program.

MDP covers all administrative, supervisory, and professional employees, and often takes in many non-exempt personnel who have

good potential. It is operated on a purely voluntary basis.

Composed of two basic evalutions—Individual and Departmental—both the individual employee and the department or plant itself is discussed in terms of future development.

First, Individual Ratings

Every year, each plant manager and principal department head evaluates all men reporting directly to him as well as any other men in his plant (or department for General Office employees) he wishes to include. Evaluation is discussed with the vice-president of personnel (Foltz) and/or the manager-employee selection and development (R. K. Bard).

Group discusses the broadening of individuals for better performance on their present jobs and for greater responsibilities. Definite plans can then be made on a plant-wide basis for rotation of employees with high potential to assignments both inside or outside the scope of their present departments.

Once a year, all other department heads and supervision at the general office and plant level evaluate other semi-monthly paid employees below the plant manager or principal department head's immediate staff with a general office staff representative or the plant personnel manager.

Same consideration for rotation and promotion is made for this line group as is made for direct staff personnel, including possible staffing of new plants.

Multi-Level Checks

All individual evaluations are reviewed through all levels of the organizational structure; i.e., for the plants, through plant managers, and for the General Office (Camden, N. J.), through the principal department head.

For example, when a general foreman is reviewed under MDP, he is initially evaluated by the superintendent of production. Comments on this evaluation are then made by the general superintendent and the plant manager at the plant level, and by the appropriate general office executive.

Individual-evaluations are meant to be flexible, and one of the program's standout features is its ease of administration. Covered are these six factors: Educational background, company responsibilities for last 5 yr., present performance, potential, strong points, weaknesses, and an Individual Development Plan.

From this profile, the employee is classified within a promotability index. Symbols used, in order of achievement, are: PR—Promotable and ready; PE—promotable with further experience; P?—Promotable but specific direction not yet determined; S—Satisfactorily placed but will probably not progress beyond present position; and U—Employee who is an adjustment case (not properly placed or unsatisfactory performance).

He is also rated as "plus" (outstanding ability and performance), "OK" (satisfactory), or "minus" (partially satisfactory or unsatisfactory).

Two major questions must be answered in an updated evaluation:

A. If the individual potential was previously rated "PE" or "P?", what experience and development has occurred and what further experience and development is necessary to become "PR"?

Over 58% of the program's 1,326 employees are presently rated in PR or PE categories.

B. If the individual performance was previously rated "minus," what is being done to improve the performance or is transfer, separation, etc., being considered?

Plan Individual Growth

Most important is the Individual Development Plan which can include: (1) in-plant development; (2) outside experience via participation in university courses, American Management Assn., evening school, etc.; and (3) rotation within his own or other departments (where his potential might be as great or greater).

Significant in Campbell's program is the rule that each evaluation be required to contain an Individual Development Plan, whether or not the employee is considered promotable. According to Foltz, "It is in the best interest of the company for each employee's abilities to be utilized to the fullest on his present assignment."

To insure proper checking of the evaluation operation, the Personnel Administration reviews all ratings with the appropriate principal department heads and members of their staffs Evaluations must have included comments from each level, i.e., plant management, principal department head, and staff review.

Individual evaluations are completed without reference to previous writeups. After the rating is made, previous evaluations are available if requested for comparison. The rater may then reword his evaluation but cannot change the basic profile.

A second element of the total MDP, Performance Review, entails each supervisor considering an employee's performance and informally working with him to improve it.

All Campbell employees have the privilege of knowing where they stand, although most workers would receive this information in

Program's Purpose and Policy

Men with ability at Campbell's know their progress is being carefully observed through a series of evaluations. Thus, each man's progress is controlled by his own initiative and leadership.

Here is the written policy covering firm's top-flight Management Development Program:

1) Closely examine existing personnel to aid each man to increase his effectiveness in his present assignment and to identify and develop future leadership potential.

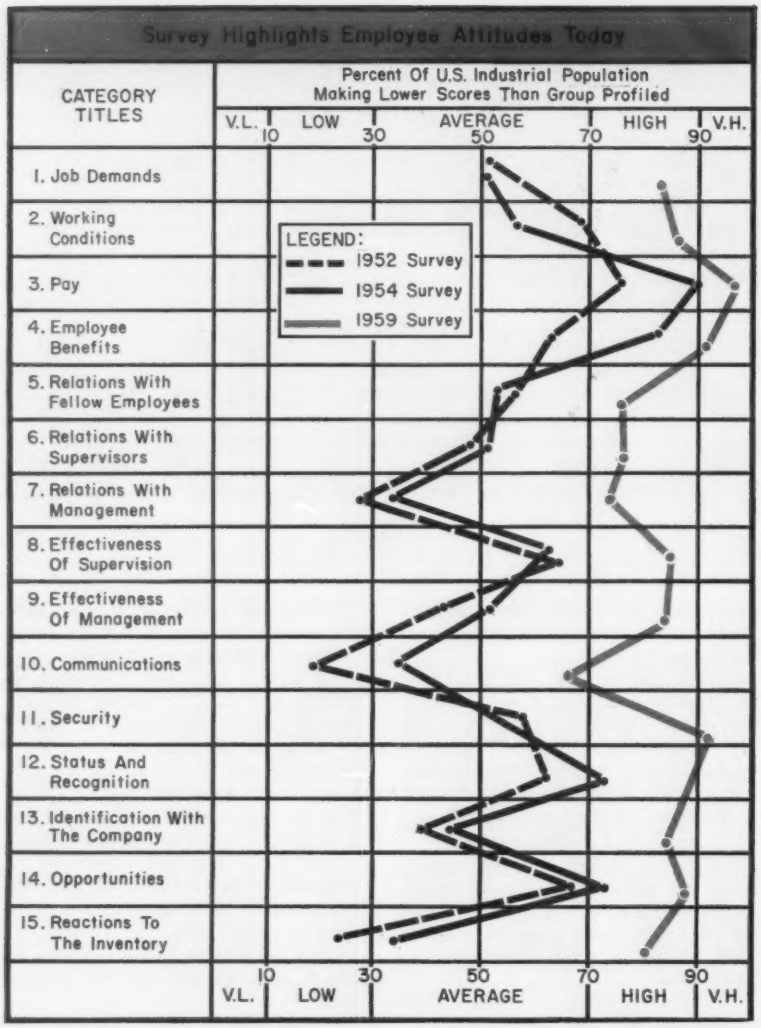
2) Continually review the organization structure and work toward the best possible organization to accomplish the company's objectives.

3) Periodically inventory and review all qualified personnel for openings and select the best qualified person for each opening.

4) Assist each member of our management group in realizing that a major part of his responsibility and own development lies in the development of his subordinates.

5) Develop individual plans to assist and encourage each individual in reaching his maximum potential.

6) Develop appropriate replacements.



ACTUAL CAMPBELL INVENTORY, prepared by Science Research Associates and conducted by Rutgers University, points up changes in attitude over periods '52, '54, and '59. Note above-average position of status, identification with company, opportunities, and other MDP-related categories as compared with all industry.

daily contacts with their supervisor. Nevertheless, the program encourages employees to understand the policy and feel free to discuss their status with their supervisors at any time.

Salary Administration is the third occasion where an employee's performance is considered. This is a review under a formalized program which requires a supervisor to consider the performance of employees under salary administration procedures.

However, under this system, no employee is ever "under the thumb" of one man. Each case is reviewed by several management people above the employee's immediate supervisor, avoiding possible prejudice, either in favor of or against the employee being considered.

Under the fourth element of the total program—Review of Candidates for Special Training—department heads are periodically requested to recommend employees for university and AMA executive development programs.

Within the last 3 yr., 36 men have received training under major AMA and college and university programs, with participants being selected from almost every department. Figure does not include numerous short or special courses of AMA.

Specific employees have included: vice-president, technical administrator; vice-president and general manager, Campbell Soup Co., Ltd.; director, industrial engineering; director, quality control; division sales manager; general superintendent; production superintendent; plant comptroller; superintendent, equipment and power; associate director, product research; senior purchasing agent; and director, accounting.

Training programs are also held at such universities as Massachusetts Institute of Technology, Columbia, Stanford, Cornell, Pennsylvania, and Ohio State. And Campbell's backs this training up with heavy financial support, having contributed approximately $2.9 million to higher education since 1950. This year, $388,000 has been distributed among 48 colleges and universities.

Departments Evaluated, Too

Aside from individual development, a most vital outgrowth of MDP is preparing and planning for long-range company expansion.

Consequently, each department or plant head reviews his overall organizational structure and suggests what he considers would be the "ideal," pointing out possible manpower requirement changes, staff needs, etc. Also, a list is drawn up noting high potential weekly or hourly employees considered promotable to the monthly payroll.

In addition, the departmental evaluation includes a list of "backstops" for all management positions where it is felt men should be coming along as replacements. These positions are all above entry jobs on the monthly payroll.

At plant level, following are usually listed as to backstops or lack of them: department heads, assistant department heads, general foremen, chief inspectors, senior chemists, standards engineers, purchasing engineers, purchasing agents, area field supervisors, project engineers, master mechanics, and chief electricians.

A manual is prepared by the personnel department containing each plant evaluation, together with individual employee reports. On a quarterly basis, personnel updates each manual with information on transferees, new employees, etc. In the event of a major reorganization, a reevaluation may be requested by the department head.

Key Men Ready

The initial staffing of Campbell's Napoleon plant is a good example of how this backstopping list works in actual practice. Company-wide consideration was given to all potential management people via careful study of evaluations provided by MDP.

Eventually selected were 48 men from 7 different locations, with 15 coming from Chicago, 13 from Camden, 10 from Sacramento, 5 from General Office, 3 from Canada, and one each from Salisbury and Cairo.

For each of these men, and all others under MDP, top executives such as President Murphy and others at the executive level had an updated evaluation of their progress and abilities.

Within six months following the completion of each year's evaluations, personnel managers and the Personnel Administration Dept. review with department heads the plans and recommendations made earlier. A report of the Follow-Up is sent to the manager-employee selection and development for further action.

Obviously, through frequent employee reviews, Campbell is constantly building a record which becomes more and more valuable. For example, in a 5-yr. period there could be compiled five different evaluations by everyone who had an occasion to supervise a particular employee.

Naturally, there are occasions when it is concluded that an employee is not suitable to his present position. "Each year," says Foltz, "we specifically identify those employees who are not making out. In solving this problem, we may suggest a change in assignment, a change in location, a training program, special supervision, and in most cases, special consultation with the employee."

Campbell's knows that management cannot and should not try to do the impossible job of making everyone happy. All it can do is provide a healthy atmosphere where people can make the most of their abilities.

In cases of unpromotable workers, attempts are made to continuously develop an employee within his present position. Beyond this, Foltz points out that "We have, in recent years, developed specific procedures to identify employees in the first five years of their employment who simply are not going to work out. We feel that it is most important to make such a determination at the earliest possible time in a man's career."

"To have a man competent to run a new plant means that he must have experience in a number of departments, be able to supervise well, and know how to adapt to new situations and environments."—William B. Murphy.

Begin With the Best

Immediately adjacent to any successful management development program is the need for an effective recruiting organization. Campbell's philosophy: "To make the best, begin with the best."

Last year, Campbell's representatives visited 38 colleges and universities and were able to fill all outstanding requisitions. In the past 2 yr., 68 young men were recruited, including several with specialized skills needed for Campbell's Container Div., Equipment Development Dept., and Basic Research Labs. At last report, 44% of the company's MDP personnel were listed as college graduates and another 21% had some college training.

Together with the Administrative Planning Staff, the Personnel Administration has prepared an estimate of manager manpower needs during the next 10 yr.

What type of man is going to fill these new posts?

Says V.-P. Foltz, "In the broadest sense, there are several 'must' qualifications and some highly desirable ones. We consider these 'must' traits to be integrity, loyalty, dependability, intelligence, willingness to work, basic emotional stability, good health, and a normal ability to get along with others. Desirable qualifications, which frequently can be developed, include enthusiasm, good judgment, capacity for leadership, etc."

While agreeing that various tests, if used properly and conservatively, can be "of considerable help in substantiating information and indicating further lines of inquiry," the personnel chief emphasizes that "we never depend on a test battery as such. In short, what we try to do is recognize individual abilities and fit the man to the job."

Campbell's long-range plans for effective administration lean toward today's "whole man" concept. More and more people are being trained in various operations.

"For example," explains Foltz, "we have personnel in numerous executive positions at all levels who come from sales, purchasing, engineering, agriculture, marketing, accounting, research, or other phases of the business."

This rotation of job experiences, or cross-fertilization, is an integral part of Campbell's MDP. "We generally agree," sums up Foltz, "that if a manager has demonstrated administrative personality, he can manage almost any operation. We believe people will rise to responsibility, and we have little fear of giving him responsibilities in an area with which he has no familiarity."

No Narrow Limits

Company eliminates the danger of becoming "in-grown" in its thinking through various methods. Participation in university, AMA, and other outside programs, plus management workshops based on other industries, point up Campbell management's belief in extra-company thought. As an added aid, firm hires a number of consultants for specialized operations.

Despite the fact that 97% of Campbell's management personnel are evaluated as satisfactory or better, and a substantial portion "Promotable and Ready," MDP is constantly being modernized.

Says Foltz, "We are reviewing our program each year, not only within our Personnel Administration Dept. and with our top management people, but also with various middle and lower management personnel throughout the organization."

Viewing the future, he adds, "We expect to have further changes simply because we believe that the whole concept of management development is geared to meeting new and changing situations."

Foltz emphasizes that the development of executives at Campbell's is as much a philosophy as it is a program per se, or a "magic formula."

And that philosophy means preparing for tomorrow by building top-flight personnel today. (End)

PRODUCT CATEGORY	NO. OF FIRMS	With Sales Holding Steady / And Profits Picking Up — FIRST HALF, '60 VS. '59		Net-as-share-of-sales shows improvement	
		SALES	PROFITS	'60	'59
Meat	10	−6.45%	+23.44%	0.83%	0.63%
Dairy	7	+5.40	+ 4.10	2.69	2.72
Packaged Goods	14	+4.64	+ 5.26	4.06	4.03
Grain Mill	4	−5.86	− 8.37	3.75	3.85
Canners, Freezers	9	+5.42	− 2.78	3.01	3.27
Bakers	6	+7.68	+ 8.53	3.38	3.35
Beverage	6	—	+ 6.70	Unavailable	
Brewing	15	+5.13	+13.30	3.44	3.19
FOOD INDUSTRY	71	Same	+ 5.00	2.44	2.42

Source: Company reports

(C) FOOD Engineering

Food Firms Buck

While earnings for most manufacturing industries went into a tailspin this year, food-beverage outfits boosted their net 5% . . . Here's a recap on how they turned the trick, plus a forecast on how they'll make out the next few months

FOOD INDUSTRY'S ability to swim against the economic tide was demonstrated once again during the first half of '60, an FE check of the financial reports of 97 food-beverage firms reveals.

In the face of slimmer profits for manufacturers in general, most sectors of the food industry fattened their sales and earnings. Also, they improved the critical profit-as-percentage-of-sales factor.

At the mid-year point, profits of manufacturing firms of all types sagged 6% below year-ago levels, according to NY's First National City Bank. In sparkling contrast with this, FE's exclusive analysis reveals, food and beverage firms hiked their earnings 5%.

Here's a rundown on how each segment of the food industry made out—providing you with a benchmark against which you can judge your own first half performance.

THAYER C. TAYLOR Associate Editor, "Food Engineering"

► **Meat firms set a sizzling pace, beefing up profits a whopping 23% despite a 6% sales decline.** Dip in dollars reflected lower prices since meat tonnage was up 7% for the Jan.-June period compared to last year.

Putting the bloom on earnings, of course, was the heavier livestock supply enabling packers to operate plants at desired high capacity levels. Also, the continuing modernization drive—marked by the replacement of old, high-unit-cost facilities with streamlined new plants located closer to supply sources, and greater use of updated technology—continued to bear fruit.

Outlook: Most firms expect the favorable trend to continue through the balance of the year. Wilson, whose profits were chopped badly by a 4-mos. strike that shuttered 7 plants, sees total meat tonnage coming close to the record '56 pack of 28 billion lbs. USDA's mid-year forecast, in fact, puts meat output at 27.9-billion pounds.

► **Dairy firms pushed dollar volume up 5%, profits up 4%, in the first half.** Helping out were broader product diversification into non-dairy food lines, accelerated new product development, and deeper penetration of overseas markets (where demand for dairy products is increasing at a faster rate than in U.S.A.).

Borden, whose net increased four times faster than its sales (12% vs. 3%), traced its gains to recovery in its grocery product lines as well as improved earnings from foreign operations. Diversification-minded

Cash Registers Jingle Merry Tune For Food Firms

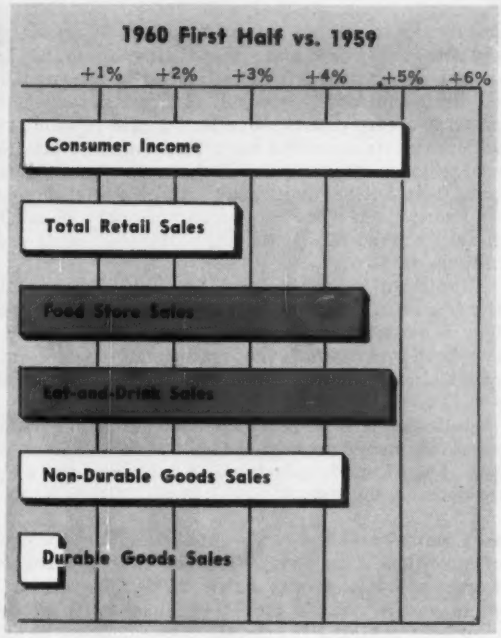
WHAT'S behind the strong first half performance by the food and beverage industry. The nature of consumer purchases so far this year provides helpful answers.

As the accompanying graph shows, retail sales of all types for the first six months was up 2.87% over last year—$110.3 billion vs. $107.3 billion. But the consumer didn't distribute this largesse impartially among all industries. Significantly, he showed more partiality for the nondurables (soft goods) sector, less for the durables (hard goods). And fewer dollars for high price hard goods always means more money to spend in the food store (for the family meal). Also, with jobs at record peak, and women representing one-third of the labor force, consumers ate out more, which also helps food manufacturers.

Here's how the figures tell the story. For the first half of '60, the consumer spent 67.16% ($74.2 billion) of his buying dollars in the soft goods field, up from 66.32% ($71.6 billion) last year. This represents a 4.17% gain although total consumer spending edged up only 2.87%. And consumer outlays in the two key outlets for food manufacturers—food stores and eat-and-drink places—shot up at a faster clip. For example, food store sales are up a healthy 4.53% ($26.9 billion vs. $25.7 billion) and eat-and-drink volume is churning along at an even better 4.89% rate ($8.0 billion vs. $7.6 billion).

Census Bureau also provides some interesting data on where the consumer is spending his food dollar. Food stores in the West, for example, boosted sales 8.76% in the Jan.-June period, while those in Northeast, which have trailed other sections in recent year-to-year gains, came through with the second strongest improvement—3.44%.

These two sections find the most dining-out going on, too, but in reverse sequence. Eat-and-drink outlets in the Northeast boomed their sales 8.19%, while those across the other side of the country helped themselves to a 6.94% gain.



Profit Downtrend

Beatrice Foods, with more than 25 new products out in the past year, was able to expand sales 8%, profits 7%.

Smaller firms in the field continued to aim for broader markets. Pet Milk, for example, stepped up Canadian penetration with a north-of-the-border acquisition.

While, overall, first half performance looked good, some softness developed in the second quarter. For example, while profits showed their usual gain between the first and second 3-mos. periods, this year's improvement was not as striking as last year's. In fact second quarter net in '60 trailed '59 by 1%.

Despite this, second quarter sales were up 5% over '59. Preventing profits from keeping pace were a series of local price wars plus stepped up merchandising expenditures as firms battled to hold or expand market shares.

Outlook: National Dairy, for one, feels confident as a result of a greater productivity flowing from its capital expenditure program.

USDA sees a slight increase in the production of milk and dairy products for the year as a whole, but a faster rise in population will brake the uptrend in per capita consumption. However, the department expects uptrending consumption of ice cream, cottage cheese, and other cheese products to maintain the strong pace of the past few years.

► **Baked goods firms chalked up strong gains in sales and profits.** Dollar volume was up 8%, net was up 9%. As a result, bakers' profit-share-of-sales sweetened from 3.34% in the '59 period to 3.58% this year.

Product diversification into higher margin items by the larger firms, and expanded marketing by smaller firms, characterized the field in the first half of '60. National Biscuit, with sales and profits touching record peaks, gave credit to the flood of new products. Acquisitions made in '59 began to pay off for Ward Baking, whose sales picked up 21%.

Second quarter softness showed up here, too. The 12% increase in profits between the first and second quarters this year fell behind the 19% improvement made in '59. In fact, bakers' second quarter net this year was slightly short of last year's results.

Outlook: Bakers take an optimistic view of the next few months. Nabisco foresees operations running at a high level as the result of (1) several new items it plans to bring out, as well as (2) efficiencies brought out by completion of its plant modernization program. And Burry, whose 39% profit improvement was more than double its 16% sales gain, sees this trend buoyed up by recent expansion into the higher-margin specialty cracker field.

► **Packaged foods outfits, favored by the trend to convenience foods, boosted profits at a faster rate than sales—5.26% vs. 4.64%.** As a result, the profit-as-a-share-of-sales ratio edged up from 4.03% to 4.05%.

Big keynote here was the drive to develop the overseas potential of prepared foods. Corn Products, who reported earnings were up significantly for for-

eign operations, showed what international marketing means by taking the Knorr soups it recently acquired in Europe and introducing them in Latin America. Standard Brands, already a strong factor in that continent, readied future expansion with plans to set up plants there that would produce products formerly exported from this country. And General Foods, stepping up its international division, piled acquisition upon acquisition—a coffee roaster in France, ice cream and confectionery concern in Brazil, a hard-candy maker in Mexico, and a potato chipper in Canada.

Significantly, packaged foods outfits were one of the few categories to avoid a second quarter letdown. Quarter-to-quarter sales gains were about the same for both years, but the traditional second period profit slowdown was much smaller in '60 than in '59 —4.17% vs. 10.33%.

Outlook: Rising personal income, stable employment, upgraded consumer tastes, and the large number of working housewives, are all expected to prop up demand for convenience items.

► **Canners and freezers went through another round of profitless prosperity—for the first 6 mos., sales were up 5.4%, profits down 2.7%.** Steadily rising costs and depressed prices (pushed down by recurring heavy packs) bit deeply into earnings. And the profit-share-of-sales sagged from 3.27% to 3.01%.

Practically all of the sizable firms in this field issue 6-mos. statements only, so quarterly breakdowns are hard to come by. However, three firms who publish 3-mos. reports (Gerber, Minute Maid, and Pacific Hawaiian) showed a mixed quarter-to-quarter pattern. Total second-quarter sales topped the previous '60 period by 9.2% and the comparative '59 quarter by 7.2%. But profits for the second 3-mos. dropped 19.6% behind the preceding period and remained about even with year-ago levels.

What accounted for the overall profit letdown were poor performance by such leaders as Libby, McNeill & Libby, Stokely-Van Camp, and Hawaiian Pineapple. Combined net for those outfits tailspinned 23%.

Outlook: 1960 still shapes up as one of the best years for canners and freezers in a long time—barring a crossup by fickle Mother Nature. Substantially lower carryover stocks, plus moderate contracting, promise a smaller total supply of processed vegetables. And with USDA forecasting a 3% cutback in fresh items, chances are good for a firm-up of prices for processed items.

While carryover of processed fruits into the new marketing season was somewhat larger, strong movement of canned varieties may keep total supplies at less than year-ago levels. And with this year's output expected to be on a more modest scale, prices may top last year's levels.

However, processors face continued cost increases. New contract for cannery workers, Calpak points out, means 7% higher costs this year, with another 5% rise scheduled in '61.

► **Grain mill firms continued to be buffeted by record wheat supplies and bitter competition among their processed products (such as cake mixes and ready-to-eat cereals). As a result, profits tumbled** 8.3% on a 5.8% drop in sales. And the net-share-of-sales dipped from 3.85% to 3.75%.

Complicating their problem is the fact that, in contrast with past year-to-year gains, the cake mix market now seems to have settled on a plateau. This has forced firms to lay out heavier merchandising expenditures to retain or expand their market shares.

Agricultural sales (formula feeds) suffered, too, when record-low egg prices made farmers reduce poultry flocks.

To improve their position, grain mill firms are diversifying more heavily into non-food products that bring higher margins, bearing down heavily on technical product improvements to stimulate greater consumption, and modernizing plant equipment to generate greater productivity.

Outlook: Probability of another bumper wheat crop this year means continued heavy supplies that will have to be moved. But USDA sees cereal foods bringing higher prices this year because of added distribution charges.

One favorable omen, according to the Value Line Investment Survey, is the rally in poultry and livestock prices, which means stronger demand for formula feeds.

► **Brewers, who have long been looking to the Sixties as the cure to what ailed them in the Fifties, had good reason to believe their optimism was well-placed.** For the first 6 mos. of the new decade, their profits zoomed 13.3% and sales picked up 5.1%. And their profit-share-of-sales was a yeasty 3.44% vs. 3.19% in '59.

Helping out were a series of price increases, the first in a long time. This defrayed part of the steady rise in labor costs and excise taxes.

Traditionally, brewers' second quarter is always a strong period as the onset of warm weather months nuzzles consumption upwards. This year was no exception.

Dollar volume in the second quarter was 33% ahead of the preceding period, and managed to top last year's period by 5%. Profits showed the same strength—up 127% from the preceding 3-mos. span, 11% over the '59 period.

Outlook: Weather, of course, deals a strong hand in the brewery field. Thus, it's interesting to note that this year's strong performance was wracked up in the face of a cold, wet spring in several parts of the country. Given any kind of normal weather for the next few months, brewers' year-end statement should show more sudsy profits than they have in a long time.

► **Beverage firms did a good job in slaking America's thirst—their profits were up 6.7%.** Aside from Canada Dry (dollar volume up 14%), none of the leading firms give interim sales figures. However, both Coca-Cola and Pepsi-Cola did acknowledge that first-half sales were highest in company history.

Expansion was the dominating keynote here—with the bigger firms racing to open untapped overseas markets, and the smaller firms scrambling to broaden their distribution base in this country. Expanded packaging figured strongly, too, as canned drinks, after several years of false starts, suddenly showed signs of developing into a significant trend.

Outlook: Development of overseas markets (with even smaller firms like Hires now stalking export sales) should encourage increased business for the remainder of the year. And the pay-off from ambitious long-range programs of outfits like those of Dr. Pepper will prop up sales. However, stepped up marketing expenditures, as competition for consumer appeal grows keener, may put a crimp on profits. (End)

HOW TO LEAD THE
"DIETETIC FOODS" PARADE

GELS WITHOUT SUGAR

Low-calorie jams...
dietetic fruit jells...aspics...
relishes...sauces...desserts...

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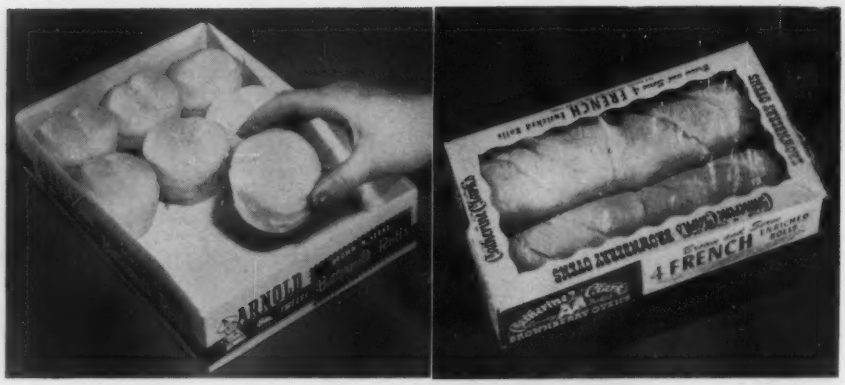


BAKED GOODS are first large-scale users of polyethylene-coated foodboard because of material's grease-resistance, chemical inertness, waterproofness. Also, package helps overcome inherent board aroma, prevents product from sticking to carton.

Why Poly-Coated Board Packs

Long-standing roadblocks are being toppled by steady technical gains . . . Fast-coming packaging tool now boasts faster, tighter sealing, stronger barrier guards, competitive cost

DRAMATIC BREAKTHROUGHS in the bakery and dairy fields put new emphasis on polyethylene-coated foodboard as an effective packaging tool. That's because of poly-coated board's four big advantages — 1) functional protection, 2) greater economy, 3) added convenience, and 4) attractive appearance.

Progressive bakers such as Drake, Arnold, and Brownsberry Ovens report that such coatings make for more appealing, functional cartons. This stems from the fact that unsightly board stains (caused by oil penetration from the product) are virtually eliminated, and the smooth, glossy surface prevents the product from sticking. Also, off-flavors and mold problems are minimized.

In milk cartons, the big plus—especially for Mrs. Consumer—is that poly coatings don't chip off the way conventional wax coatings often do. Another important advantage: Improved resistance to leakage, hence fewer "consumer rejects."

There are many strong reasons why poly-coated paperboard is destined to become a large-volume packaging medium in the food field.

Let's take the milk container as an example. Over one-half of the 27-billion milk container market is now serviced by paperboard cartons. Their share is expected to expand, and poly-coatings may be the driving force.

Key question here is, "What about the cost?" The answer: Poly-coated cartons are definitely competitive.

For example, a 3000-sq. ft. ream of paperboard requires approximately 105 lb. of paraffin wax for milk carton construction. Only 30 lb. of poly would be needed to coat the same ream 1-mil thick on each side.

This coating thickness is more than adequate to give desired protection. And the cost, exclusive of processing and converting expenses, would favor poly. As the poly coating thickness is decreased, while maintaining good protection, the cost advantage of poly over wax for milk containers increases appreciably.

Good-Looking Prospects

A strong potential application for poly-coated board is cereals packaging. Such a board gives good moisture protection with possible reductions in material costs. The coated box is its own moisture barrier; thus, no inside liner is necessary.

The high degree of consumer convenience this integral-type package offers is obvious. It is a one-step unit instead of the conventional multiple-step one. The coating eliminates the bother of opening and closing two packages —the box and the liner bag.

Integrated package also promises greater efficiency for frozen foods. A box coated either inside or out with poly does away with the need and the cost of an overwrap.

If used outside, the coating's high surface gloss permits detailed printing. The plastic's clarity also enables it to be coated over printing which is applied directly to the paper surface.

Freezer toughness and moisture barrier properties, equal to or better than the carton plus overwrap package, are other features of the coating. And, there would be no danger of moisture loss due to creasing since creasing has little or no effect on the barrier performance of the poly coatings.

Poly-coated board also does not delaminate as convential laminated board sometimes does. One leading board maker has packaged bakery products at temperatures as high as 180F. with no sign of delamination.

A. E. IRVINE
Market Manager, Union Carbide Plastics Co., New York

TABLE 1—Grease and Oil Permeability of 14-pt Boxboard Coated with 1.5-mil Polyethylene.

Coating Density	Average Number of Days to Failure* (Samples Stored at 75F) Butter	Lard	Peanut Oil
0.92	115	125	50
0.93	125	165	125
0.95	190	200	235

*Failure was recorded with the first sign of staining on the uncoated surface of the paperboard.

More Appeal Now

Thus, there is slight chance of a coated package delaminating as it passes through the heaters on a wrapping machine. This is particularly advantageous in bakery and candy packages where paperboard plus transparent overwrap is frequently used.

New Developments

The four basic advantages of a polyethylene coating—functional properties, economy, convenience, and appearance—have been further strengthened by a series of recent technical improvements. These are:

Glueable-Printable Coating

In the early stages of commercial use, poly-coated board was hampered by relatively low heat-sealing speeds. But new techniques—essentially a treating operation of the coated surface to permit printing and glue sealing—enable the board to be run on conventional boxboard equipment at acceptable commercial speeds.

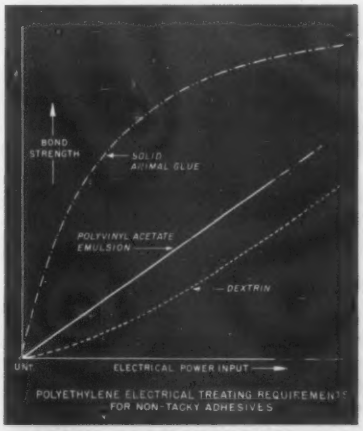
In extensive evaluations at Union Carbide Plastics' laboratories in Bound Brook, N. J., it was found that firm bonds between a poly-coated surface and a paper can be achieved with conventional packaging glues, both tacky and non-tacky types. With the non-tacky variety, the most commonly used adhesives in paperboard packaging, the poly must be adequately treated to provide good adhesion. Chart in next column indicates how the bond strength of various non-tacky glues becomes stronger as electrical treatment of the polyethylene surface increases.

High-Density Poly

Although hi-density poly was announced with a flourish some time ago, ft is only recently that some of the production problems have been satisfactorily ironed out to permit commercial applications.

Extrusion coating is a good case in point. Hi-density coatings on paper simply were not economically feasible until very recently.

The lowest possible coating weights obtainable here were 20 lb./ream of paper, and coating speeds were prohibitively slow. Now available, however, are hi-density materials, such as Bakelite polyethylene DGD-7401, which can be extruded onto paper in weights as low as 6 lb./ream at speeds in excess of 250 ft./min.



ADHERENCE of non-tacky glues, most widely used type in food packaging, increases as result of electrical treatment of poly surface. Tests at Union Carbide lab showed similar results for tacky-type adhesives.

Significance of this development is that poly-coated paper or board is now economically practical for high-barrier applications.

Commercial "proof of the pudding" of hi-density poly/paper combinations is the multiwall shipping bag. Several leading chemical companies are now using bags extrusion-coated with hi-density poly for calcium chloride, for example. Such coatings provide improved economy/performance balance.

Prior to marketing hi-density poly-coated multiwalls, one leading paper company had extensive moisture barrier tests conducted by an independent research laboratory. Fifty-pound bags, coated with various weights of hi- and low-density poly, were filled with calcium chloride and stored for 360 hrs. at 100F. and 90% relative humidity.

It was found that such coatings gave better protection than low-density ones almost twice the weight. For example, a 6 lb./ream hi-density coated bag showed 0.057 moisture pickup per hour compared to a 0.066 pickup for a 10-lb. low density coating. An 8-lb. hi-density coating demonstrated less pickup than a 15-lb. low-density coating; an 11-lb. hi-density less than a 20-lb. low-density.

The principal shown here illustrates the potential of hi-density coatings on foodboard. These barrier properties, for example, may mean hi-density poly is the best bet for certain moisture-critical applications such as cereal boxes, or single-wall frozen food cartons. Liquids, too, could be packaged in properly designed, hi-density poly-coated paperboard containers.

Barrier performance of hi-density poly, of course, also includes resistance to fats and oils—important considerations in baked goods packaging. Table I summarizes a series of tests conducted in the development laboratories of Union Carbide Plastics on the permeability characteristics of various densities of poly coatings on paperboard.

Test environments included butter, lard, and peanut oil. These results give a good indication of the barrier improvements provided by hi-density coatings. For example, under exposure to peanut oil, a very high penetrating oil, a 1.5-mil hi-density coating on 14-pt. board averaged 235 days to failure compared to 50 days for

in packaging

Weyerhaeuser

(Ware'-hous-er)

is pronounced

Ingenuity

(In-je-nu'-i-ti)

If there were a popular demand for autumn leaves, Weyerhaeuser Ingenuity would package them to give you a selling advantage.

Much more goes into Weyerhaeuser cartons than the contents they protect. Each represents the skills and experience of a large team of packaging specialists. From timber—grown as a crop—to merchandising excellence, every step of production is carefully planned to satisfy and economically meet the needs of each carton user.

Impelling design for high shelf-appeal, plus high-fidelity printing, gives Weyerhaeuser cartons the "quality look" that attracts self-service shoppers. Carton uniformity speeds filling and closing, reduces costly rejects. Shipments-as-promised enable users to maintain efficient production.

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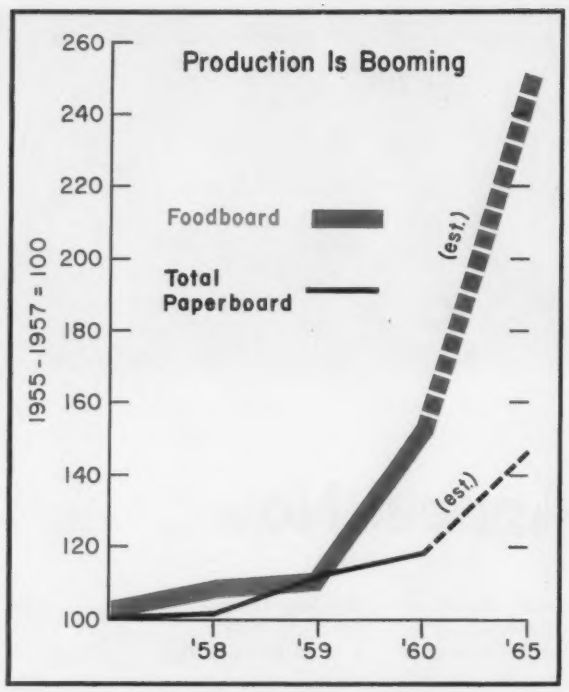
This informative "Ingenuity" booklet colorfully explains how Weyerhaeuser can service you. It shows not only how Weyerhaeuser works but what Weyerhaeuser will do for you.

Ingenuity

Weyerhaeuser Company

Boxboard and Folding Carton Div.

Headquarters
919N. Michigan Ave.,
Chicago 11, Ill.



DEMAND for food board is expected to set blistering pace the next 5 yrs., may reach 3 million short tons vs. 1½ used currently. Gain will outdistance growth rate of total paperboard.

low density and 125 days for medium density.

Poly-coated paperboard is not recommended for long-term storage of these test materials. Tests should be conducted to determine the storage performance of poly-coated board with the specific product to be packaged.

These tests also included an evaluation of 17 standard laminated paperboard constructions (not shown in table). Highest rating achieved by any of the laminated boards was 63 days to failure under test with butter. As the table shows, most of the ratings for board coated with polyethylene of any density averaged well over 100 days in all three tests.

In addition to excellent barrier properties, hi-density poly coatings provide superior scuff and improved heat resistance.

▸ High-Speed Coating

Another major advancement has been the improvement in extrusion coating techniques. Most existing extrusion machinery coats board at a rate of 300 ft./min. Poly compounds are now available which can be extruded onto paperboard at speeds higher than 500 ft./min. This greater production efficiency means increased output which can eventually lead to material cost savings for food firms.

▸ White Coating

Still another significant development as far as the food packager is concerned is a white-pigmented poly coating compound. This surface treatment upgrades such low-quality materials as chipboard and gray newsboard to a point where they are comparable in appearance (but still lower in cost) to the high-premium, high-reflectant white boards used in gift cartons and displays.

This coating has found use in the baking industry, on boxboard and most recently on the inner surface of paper bread wraps. Bakers using this type wrapper report that it provides significantly better keeping qualities than conventional wax overwraps, adds strength to the paper, and gives greater opacity or "whiteness." This whiteness factor makes the printing stand out better.

All of these new developments, plus poly's basic advantages, clearly indicate the bright promise of poly-coated board as a food packaging tool. Some of this promise has already started to materialize, but it only represents a small fraction of the overall potential. Through the combined efforts of package suppliers, raw materials supplier, and food producers, the principles for success will be converted into commercial fact. (End)

How Weyerhaeuser Ingenuity Helps Sell Bernz-O-Matic Torches in 4 Seconds!

- Boosted Sales 5% to 20%
- Transformed Utility Tools into Gifts

PROBLEM: A point-of-purchase display carton to stop and *sell* busy shoppers of both sexes, all ages (researchers say this must be done in four seconds, or sale is lost)—a salesmanship package that encourages "impulse buying" of Bernz-O-Matic Propane Torches for personal use and as gifts. Otto Bernz Company, Inc. of Rochester, N.Y., found that retailers frequently displayed torch packages lying down, showing only the ends of the cartons, thus minimizing display and losing impulse sales.

ANSWER: This interesting and attractive package, made with acetate panel for product display, a unique "pick-me-up" handle, and lifelike 4-color in-use illustrations, it's such a standout on counter and shelf that Bernz-O-Matic sales jumped 5% to 20%. Robert Zeidman Associates designed the package and recommended Weyerhaeuser be used to adapt the package for economical, trustworthy production. The success of Bernz is typical of how Weyerhaeuser cooperation and ingenuity has paid off for designers and manufacturers alike.

In packaging **Weyerhaeuser** (Ware'-hous-er) is pronounced **Ingenuity** (In-je-nu'-i-ti)

IRRESISTIBLE EYE-APPEAL. Complete torch (fuel cylinder and burner) is instantly visible in this colorful "Carrying case" carton. Price tab is tear-off type, especially desirable for gift sales.

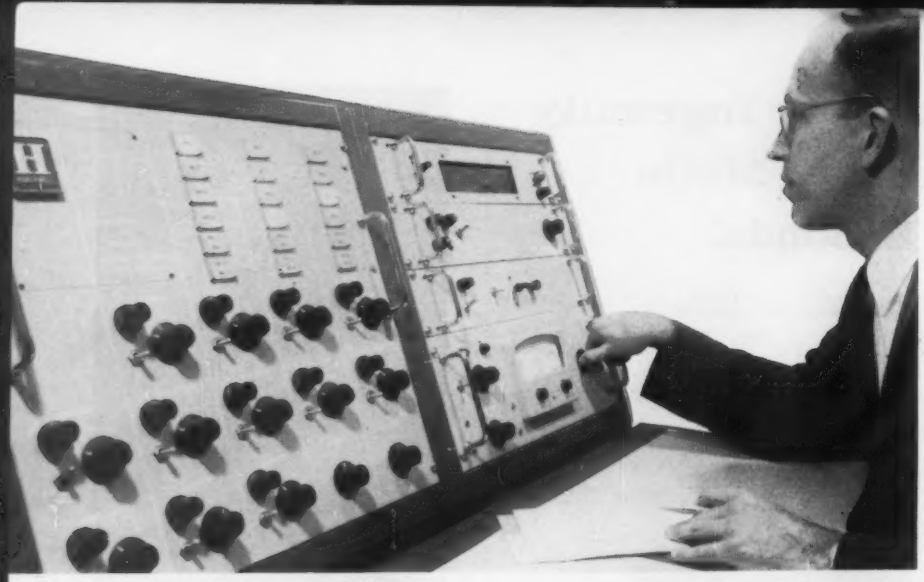
PROTECTION, YET READY ACCESS. Opening of top flaps permits removing inner box to which handle is attached. Also made in larger size with fuel cylinder, burner and an assortment of torch attachments.

WRITE FOR NEW FOLDER. You'll see why cartons for all Bernz products now are being redesigned to obtain maximum torch-sales results.

Weyerhaeuser Company

Boxboard and
Folding Carton Division

Headquarters:
919 N. Michigan Ave., Chicago 11, Ill.



SINGLE-PURPOSE COMPUTER at H. P. Hood instantly resolves optimum ice cream formula after operator dials in the batch quantity and ingredient analyses.

Computer Perfects

Industry-wide use seen for analog unit that calculates minimum-cost formula, codes it on punch card to control simultaneous batching of ingredients

BY PUTTING its automatic batching of ice cream mix under computer control, H. P. Hood & Sons, Boston, has scored an impressive 'first' with industry-wide significance.

Among other things, the system eliminates the time lag and possible error in manual batching calculations. Generally, you have to refigure each mix because of frequent variation in raw-material analysis and cost, and/or daily production of many different items.

Moreover, the computer can minimize your formula cost, and it makes no difference whether you are batching ice cream, meat products, or cake mixes.

Precision Batching

Hood's computer is a relatively small, single-purpose analog type that is accurate to ±0.02%. Located in a central control room, it instantly determines how much of each ice cream ingredient is required for a particular mix, then digitally codes the formula on a punch card. If quality specifications can't be met with certain raw materials, the computer so indicates.

Punch cards — one for each batch — are 'read' by electronic units that open valves to send ingredients from storage to blending tanks. Pre-set flows are gaged and totalized by special flowmeters, which also signal the automatic closing of valves when predetermined quantities have been delivered.

Entire mix process is graphically portrayed on a control panel that also indicates tank levels, totalized ingredient flow, valve positions, safety interlocks, pump operations, etc. In addition, other instruments monitor HTST-pasteurization, homogenization, and cooling of batches.

Even in-place cleaning of lines, valves, and tanks is push-button programmed from the panel. All the operator need do is set switches that direct the various flow sequences.

Finally, the above-mentioned punch cards are used for production control and post-batching audit.

Problems and Solution

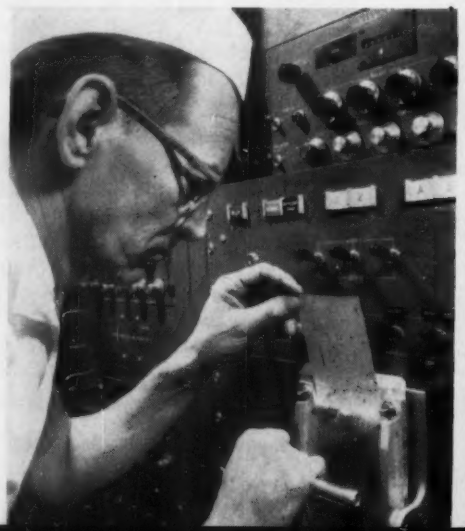
The system was conceived by Hood and engineered in cooperation with Brown Instruments Div. of Minneapolis-Honeywell Regulator Co., Philadelphia. Part of a $350,000 expansion program, its objectives were to:

1. Improve product quality and uniformity.

2. Minimize waste, product giveaway, and unidentified losses.

3. Boost production from 1,300 to some 2,500 gph.

CODED PUNCH CARD programs entire batching process.



FE Staff

Computer Control Concerns You Now

Whether your operations are large or small, the automation concepts in H. P. Hood's computer-controlled batching can cut your production costs, while boosting output and product uniformity. They certainly have for Hood.

The single-purpose computer that monitors the entire mix operation is particularly applicable when cost and chemical analysis of your raw materials vary day to day. Or you may do repetitive batching calculations simply because you produce a variety of items.

Hood's problem was to batch some 30 different ice cream mixes at minimum formula cost, while meeting rigid specifications for butterfat and solids content.

Now, for the above analytical variables, substitute protein, fat, and moisture—and you have the key to the sausage maker's formula problem. Similarly, the miller and baker are very much concerned with variations in protein, moisture, and ash in grain and flour. And so on. The list is long simply because non-processed food ingredients are inherently variable in composition.

To a computer, however, there is only one formula problem regardless of the product. And it can easily maximize or minimize ingredient quantities in any given mix. This is not to say that you will always use the lowest-cost formula, because factors other than ingredient cost may come into play, but the computer can supply it.

In fact, computer technology can now handle virtually any type of food-processing calculation and use it for control. What instrument manufacturers generally lack, and understandably so, is the detailed knowledge of your process necessary to put computers to work for you.

Realizing this, astute food processors are encouraging closer cooperation between their engineers and instrument-company specialists That's the way Hood did it. Mr. C. H. Hood sums it up this way:

"We were fortunate, indeed, that Minneapolis-Honeywell joined us in tackling this complex formulation puzzle. Otherwise, we might still be looking for answers. Honeywell engineers brought a great deal of insight and creative imagination to bear on the problem. More important, they spent a lot of time in understanding exactly what the ice cream problems were from the point of view of our production people."

Automatic Batching

4. Consolidate the already crowded regular-mix processing with a soft-mix operation from another plant — without increasing existing working space.

5. Eliminate or greatly reduce manual handling of ingredients.

6. Replace equipment, such as sugar storage tanks, vat pasteurizers, and batching scales, which had become obsolete.

7. Simplify sanitation and equipment maintenance.

In time, these goals became the advantages of the system because all of them were realized. Hood approached the many necessary changes stepwise.

An early decision was to convert entirely to bulk receipt of all ingredients in liquid form for easy pipeline handling in the plant. Next, various HTST-pasteurization methods and in-place cleaning techniques were studied.

Batch measuring was a particular problem that was ultimately resolved by use of flowmeters. True, accuracy of volumetric meters is affected by variations in product specific gravity caused either by temperature change or entrapped air. However, Hood felt that their relative ease of operation and cleaning, plus ability to handle large volumes quickly, justified a minor compromise.

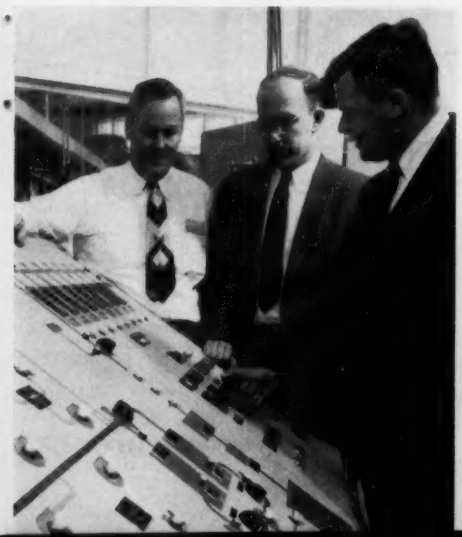
Perhaps the prime factor favoring flowmeters was that the system called for metering accuracy of 0.1% over a range of 10-15,000 lb. This indicated use of a number of compact units rather than a single weighing device.

Chosen for the job was the Pottermeter (Potter Aeronautical Corp., Union, N. J.). An in-line sanitary meter, it houses a turbine-type rotor imbedded with a magnet. As liquids pass through the unit, its rotor generates electronic pulses proportional to rate of flow.

Separate meters are used for each dairy ingredient, also liquid sugar and chocolate. They are easily cleaned in place, while their elelctronic controls are centrally located.

At this point, Hood called on Minneapolis-Honeywell to integrate the entire mixing operation. This resulted in the central control system with its graphic panel depicting all major equipment and lines of flow.

GRAPHIC PANEL depicts equipment and flow lines, also monitors CIP.



Computer Control Essential

The system did not take final form, however, until the calculation of mix formulas was automated. This was the last, but all-important step, for these reasons:

Conventional methods of formula calculation were too time-consuming and inexact. In addition, Hood produces some 30 basic ice cream mixes with different butterfat and solids contents.

Dairy ingredients include milk; 40% cream; condensed whole milk, skim, and premixes; and rerun. Non-dairy components are liquid sugar, corn syrup, and water. The formulation problem is to batch certain of these ingredients and arrive at a minimum-cost mix that meets specifications for butterfat and total solids.

An exact solution entails a fairly involved calculation. Much worse, it has to be repeated almost every time a batch is mixed because:

1. Butterfat and solids contents of dairy ingredients vary day to day.

2. There are many ways in which it might be convenient to combine the ingredients.

Short-cut methods are widely

used to speed calculations, but they generally are based on simplifying assumptions that make the result too inaccurate. Error in this case is a two-edge sword. If butterfat content of the mix (the prime consideration) is too low, legal complications and/or customer displeasure are apt to ensue. On the other hand, if it is high by as little as 0.25%, product give-away amounts to $50 to $100 per hour in Hood's production.

Even costlier, perhaps, is the usual practice of using a fixed quantity of a certain ingredient and adjusting all others to correspond. This simplifies calculation, but does not necessarily give the least-expensive mix.

Thus, Hood again turned to M-H computer specialists to assist in design of a simple unit capable of making rapid, accurate, and cost-oriented calculations. Development of such a computer completed the system, which has now been successfully operating for about nine months.

Cost of the system, including computer, IBM punch card, batching equipment, and in-place cleaning, is estimated at between $40,000 and $80,000. The computer itself probably amounted to $20,000. It is safe to assume, however, that a similar installation would now be much less costly.

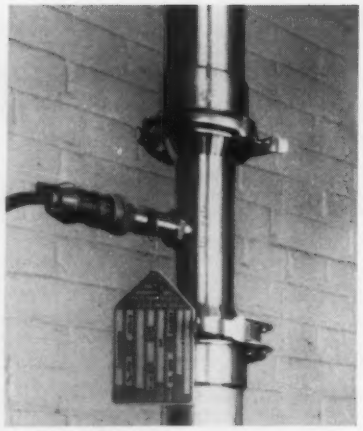
Along these lines, W. Taylor, marketing manager of M-H's Food Industry Div. points out that such single-purpose computers can be made more or less automatic and comprehensive as required. Thus, they can be designed to fit the smaller-company budget, and kept gainfully employed for reasonable amortization.

System in Action

For any given mix, operator programs the computer by manually inserting certain process data. These include total batch weight plus percentages of butterfat and serum solids of ingredients. Latter are supplied by laboratory analyses.

Next, three dairy ingredients are selected, one as a known adjustable quantity. This can be any one of six dairy products available. In about 50 milliseconds, the computer solves for the required quantities of all other materials, and codes the data on a punch card. Total elapsed time per batch is about six minutes.

Automatic batching begins when operator inserts the coded punch card into a card reader. Here,



SANTARY FLOWMETER gages and totalizes ingredient flow.

punched holes are converted into electrical impulses that control the batching. After pressing the card holder's handle, operator pushes a "ready" button that initiates the process.

Console controls monitor the operation to the extent that they stop the blending if there is an insufficient amount of any ingredient, or some other irregularity occurs. In that case, operator can use a supplementary card, after correcting the condition, for batching of a single ingredient. However, he must return to original card to complete the batch. Identifying lights keep him informed at all times of how batching is progressing.

After all ingredients are in, the system allows time for drainage of pipes and headers into the blending tank. Console then records the batch as complete, and automatically switches subsequent flow to the second batching tank employed.

Operator can repeat the identical mix merely by pushing the "ready" button, or he can deliver a new formula by using another punch card. In an emergency, the system can be operated without a card by manually introducing the ingredient quantities and their batching sequence.

Automated CIP

Also incorporated in the control console is the automatic CIP setup —actually five systems in one, but each operating independently. An unusual feature is provision for recycling, in sequential cleaning of tanks, of final rinse for use as prerinse for next tank to be cleaned. A series of interlocks prevent start-up unless all manual field connections are properly made.

All individual CIP circuits have high- and low-level probes, temperature controllers, adjustable cam timers, and cycle circuit steppers. Cam timers have special switches (Micro Switch) whose off-on action pulsate valves to aid dislodging of solids.

Mix-process equipment is CIP'd in five steps: (1) Raw-product pipelines, (2) HTST unit, (3) pasteurization lines, (4) raw-product tanks, and (5) mix-storage tanks. Two solution tanks enable simultaneous cleaning of any two steps.

Usually, pipelines and HTST cleaning is done at end of each day's operations. Tanks may be cleaned during the day. Periodically, they may be cleaned with an acid wash rather than detergent.

(End)

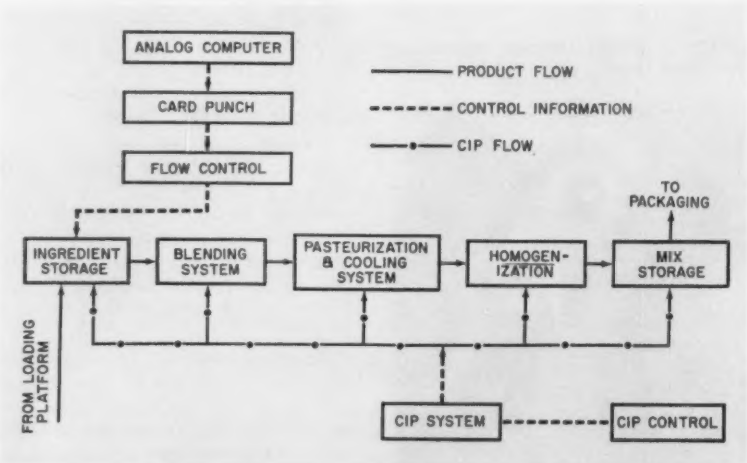
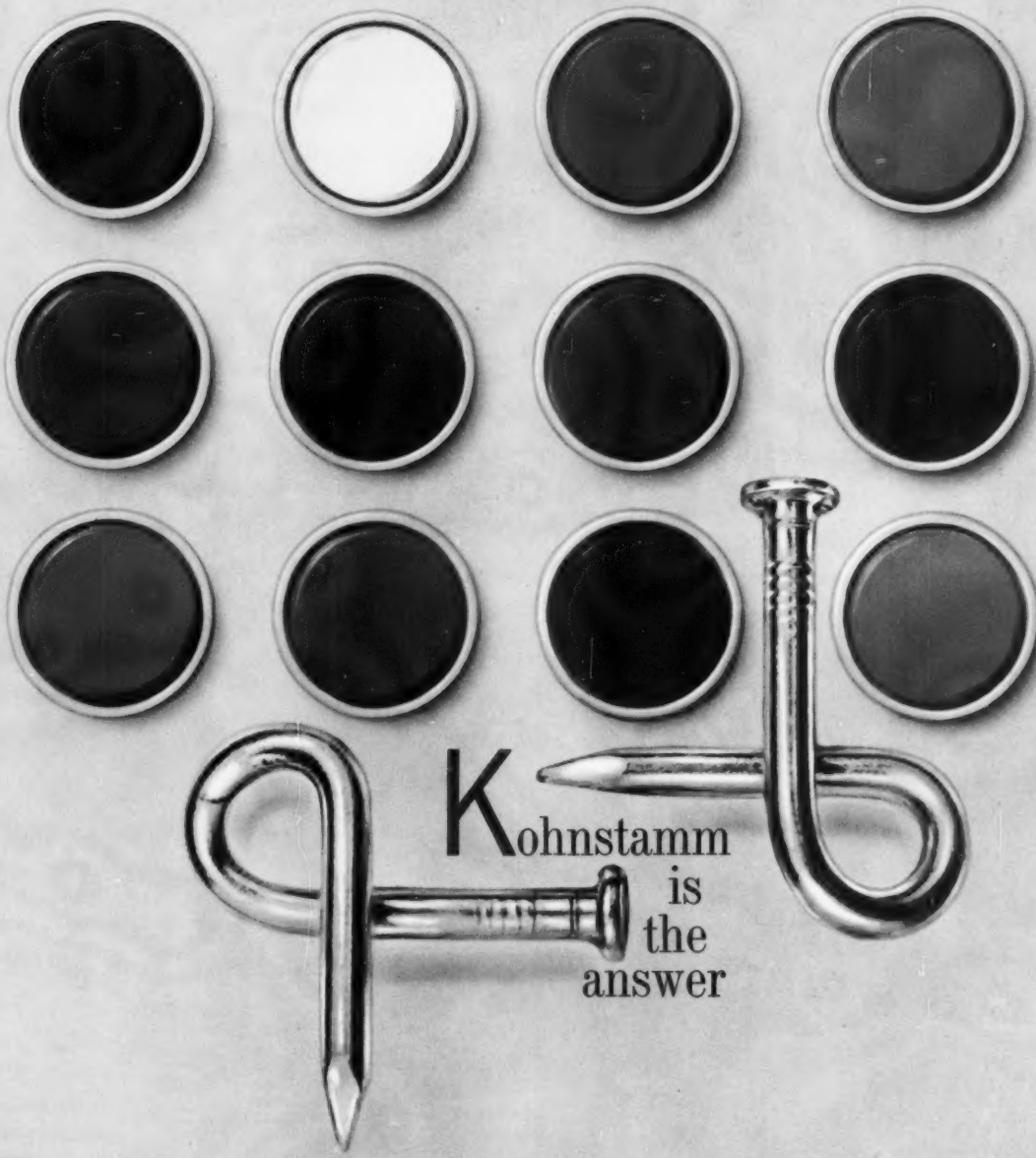


DIAGRAM shows integration of computer, batching controls, and CIP.

If color is your problem...



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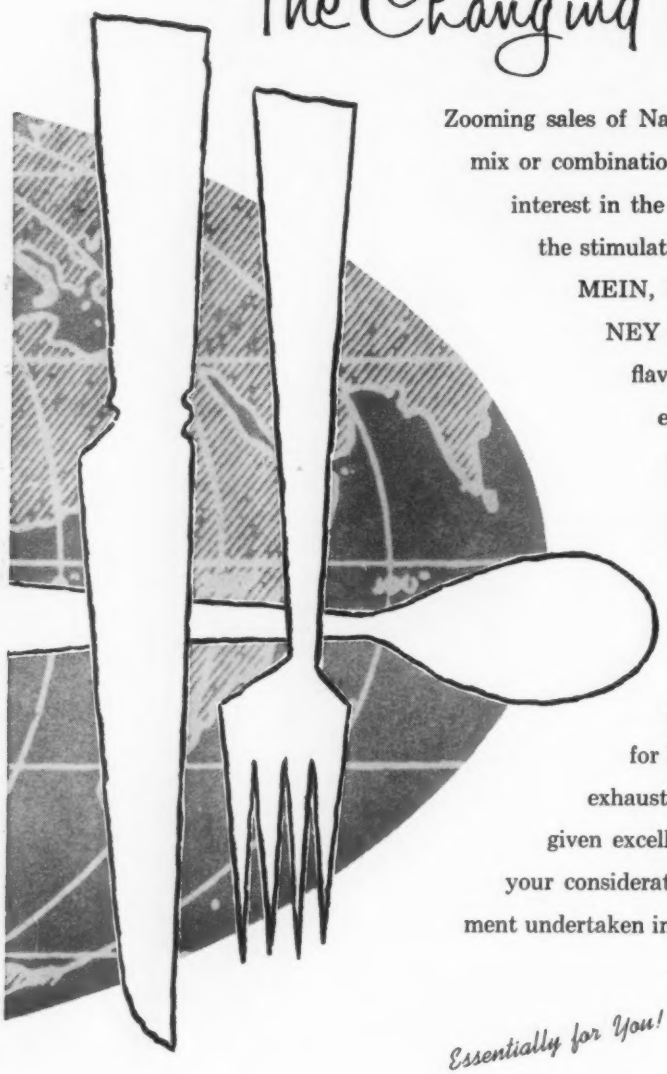
"The Changing World of Food"



Zooming sales of National Specialties in canned, frozen and dry mix or combination form indicate a vastly increased American interest in the culinary delights of other peoples. They like the stimulating and distinctive flavors of PIZZA, CHOW MEIN, BLINTZES, BORSCHT, CURRY, CHUTNEY and ENCHILADAS . . . but here indeed the flavor must be right! If it isn't, despite the lure of exotic names and places, Mrs. Housewife will not buy a second time. The general popularity of National Specialties can often obtain your first sale . . . the second and all thereafter can only be insured by a quality product that lives up to the family's highest taste expectations. The D&O Flavor Laboratories have developed an entire group of Seasonings for National Specialties, for just this purpose. In exhaustive tests with the finished products they have given excellent results. Trail quantities will be sent for your consideration on request . . . and individual development undertaken in the labs on specific problems. Consult D&O.

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Sales Come Alive
with new
Western-Waxide Five

Food needs robust packaging to sell on today's crowded shelves. Here are five new ways major food producers are using Western-Waxide packages to keep sales healthy and growing. For complete details on any or all of the packages shown, write: Warren Townsend, 2101 Williams Street, San Leandro, California.

FRITOS* CORN CHIPS POUCH: New method of pouch packaging replaces bags . . . offers lower production costs.

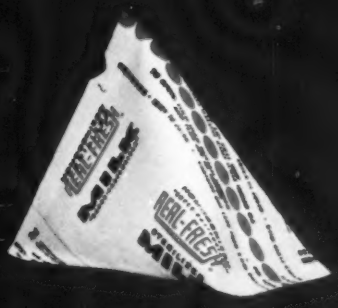
CHET'S BOILABLE POUCH: This gleaming aluminum pouch for prepared frozen foods needs no carton or overwrap. The crisp four-color printing resists boiling water.

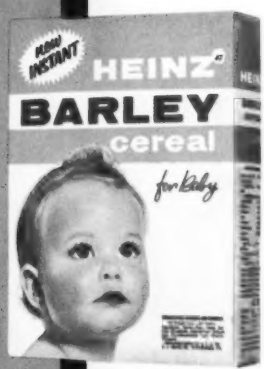
H. J. HEINZ BABY CEREAL OVERWRAP: Six-color rotogravure printing makes this Western-Waxide wrapper sparkle with eye appeal—color coding identifies varieties. Machine overwrapped from roll stock.

HORMEL BACON PACKAGE: The semi-rigid five-color Mullinix Peek-A-Boo® package keeps displays neater and bacon fresher. The flap provides light protection, strong visual impact, and allows shoppers to inspect the contents.

REAL FRESH MILK, INC.: New low cost, paper / foil / polyethylene laminated Tetra Pak package protects whole sterile milk against contamination—without refrigeration.

*Fritos is a registered trademark of The Frito Company





CROWN ZELLERBACH
WESTERN-WAXIDE DIVISION

Plants and sales offices in principal cities throughout the United States
Headquarters, 2101 Williams Street, San Leandro, California
In Canada address product inquiries to Crown Zellerbach Ltd., Vancouver, B.C.

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Just as important as a suitable stainless steel alloy are these four checks on valve quality. For long, dependable performance, a valve should rate *perfect* on every one.

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If you will put a Jenkins Valve, recommended for your particular service, on the worst place you can find . . . where you cannot keep other valves tight — and if it is not perfectly tight or it does not hold steam, oil, acids, water or other fluids longer than any other valve, you may return it and your money will be refunded.

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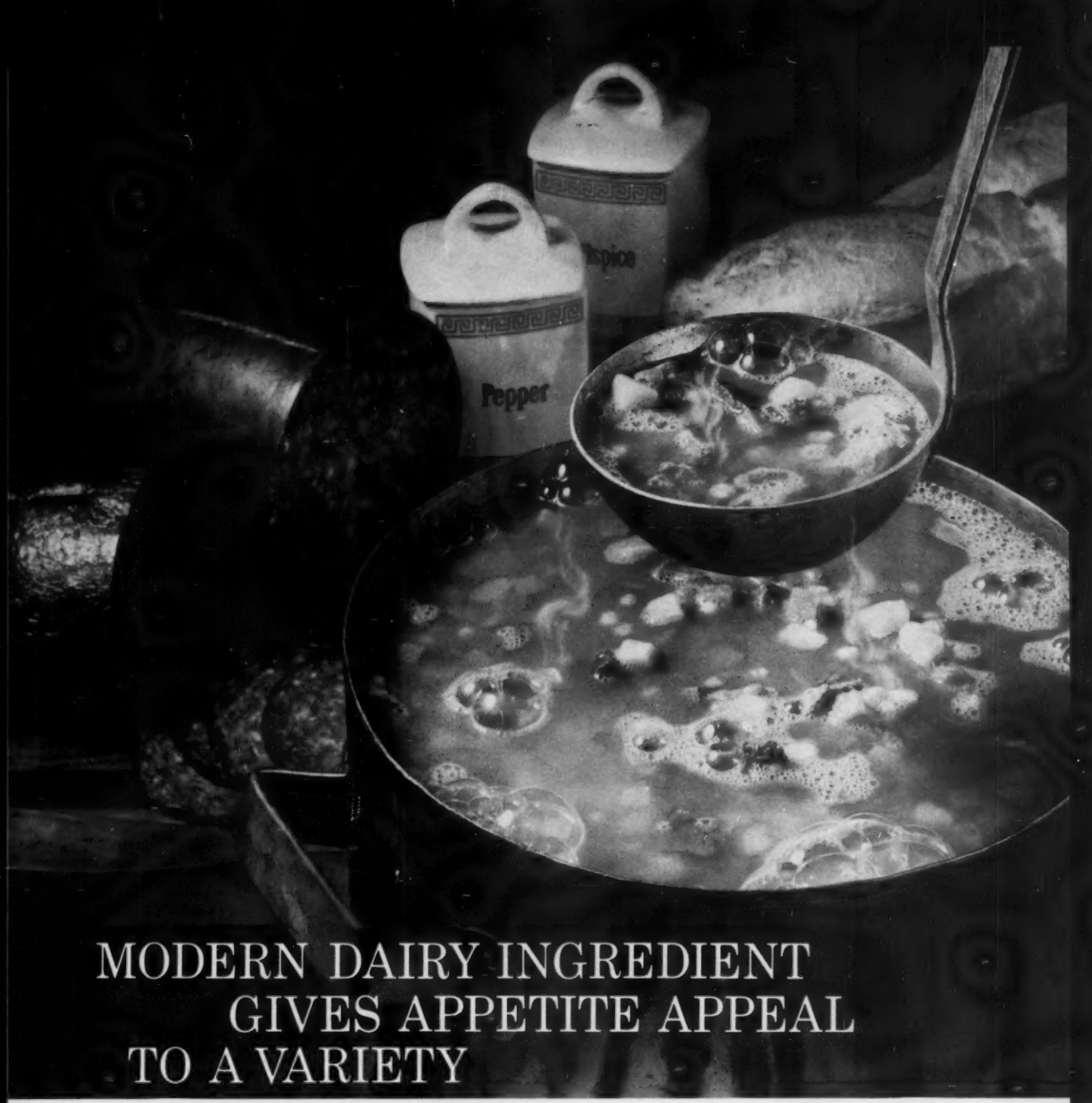


MODERN DAIRY INGREDIENT GIVES APPETITE APPEAL TO A VARIETY OF FOOD PRODUCTS

Valley Fresh Sweet Dairy Whey, an excitingly different dairy ingredient, contributes to the taste, texture, shelf life and finished color of almost every known food product. And as others have found out...formula costs decrease.

This pure 100%, high quality, dairy ingredient goes into solution instantly and uniformly. Pound for pound, it provides a higher content of lactose (milk sugar) and lactalbumin protein than any other natural fraction of milk. Use Valley Fresh Sweet Dairy Whey to improve all your products, whether wrapped, canned, boxed or in a jar.

Valley Fresh Sweet Dairy Whey offers you this important extra: technical knowledge. At your disposal are the skill and experience of the world's largest whey products manufacturer.

Get the facts on Valley Fresh Sweet Dairy Whey today. For technical bulletins and information on other Western food ingredients, write Technical Service, Department 16I.

Valley Fresh Foremost

WESTERN CONDENSING COMPANY

Appleton, Wisconsin

World-Wide Producer of Quality Milk Products

Libby's Safety Program

Slick as a whistle is the way your plant—big or middle-sized—will run with a system like this one. And you'll save a tidy piece of change, too

THE SAFETY RECORD at Libby, McNeill & Libby Co. is pretty good —and it has to be!

Working with a wide variety of products and machines in canning plants can be hazardous unless rigid safety precautions are enforced. So it's no wonder that Libby's Eastern Division, for example, worked to cut down its frequency rate (number of lost time accidents per million man-hours) from 34.6 in '48 to 9.1 in '58.

"MIRROR, MIRROR on the wall—am I the safest of them all?" Seeing his own image, the passing worker tends to take stock of himself—especially safety-wise, due to the posters alongside. That's the impact of strategically spotted looking-glasses in one of Libby's plants.

Other company divisions have also turned in creditable performances in reducing frequency rates. And they operate on a program similar, in most respects, to that of the Eastern Div.

But Libby also labors to keep complacency from creeping in. It wants to squeeze the last measure of control into its safety program. And that desire was behind firm's thinking when it introduced its safety program over 10 yr. ago. In this program, each job is studied to determine the practices and conditions necessary to make it danger-free.

Once these dangers have been established, the big job is to sell their importance to the employees.

Libby developed an effective way to do just this through better communication. This has been achieved, at Chicago headquarters and at divisional and plant levels, through supervisory participation and authority, and through regular and intensive personal contact between safety committee members and the workers.

In the meantime, the headquarters' safety group constantly visits plants and works with the plant safety committee. In turnabout fashion, each committee chairman reports back to the plant manager and divisional safety committee.

Campaign Kickoffs

Plant safety got notable shots in the arm during the past decade from two special safety campaigns in the nature of contests. First was a product safety campaign adopted after '48's poor accident frequency rate of 34.6.

This campaign was directed to seasonal plants packing peas, corn, and tomato juice. Plant with the best safety record was awarded a plaque—signed by the company president and presented at a special company gathering.

The short-term campaign aroused much interest and competition. More important, the accident frequency rate in the Eastern Division, for example, dropped from '48's high of 34.6 to 30.0 in '49. The rate continued to fall over the years—to 22.0 in '50, 23.0 in '51, 20.0 in '52, 17.5 in '53, 15.5 in '54, 14.2 in '55, 17.0 in '56, and 17.3 in '57.

In checking these figures, the company quickly realized that this simple program really paid off. Accident frequency for the entire Eastern Division, when compared with '48, showed its biggest drop —about 60%—in '55.

So, the safety people worked out a second campaign—a plant safety contest. This yearly competition was initiated in '58 to cover three groups of plants on an annual man-hour basis to include small seasonal (less than 50,000 man-hours), seasonal (50,000 to 300,000), and year 'round (over 300,000) operations.

The winners in each group received, according to respective size of operations, $200, $300, and $500. They also got a plaque, and employees were feted at a company picnic or dinner.

Payoff is Big

What's been the effect of this contest? Answer: Combined accident frequency rate for one division (Eastern) fell almost 50% (from '57's 17.3 to '58's 9.1) since the contest began. This drop has resulted in substantial savings in insurance premiums as well as indirect costs.

Libby's biggest expense with accidents isn't compensation. Rath-

R. C. LEITNER and C. E. WRIGHT
Respectively, Supervisor of Industrial Relations, Eastern Div., and Asistant in Charge of Safety, Eastern Div., Libby, McNeill & Libby Co., Chicago

—From Scratch

er, it's the indirect costs—lost production, skills, wages paid to workers whose jobs are interrupted, etc. Accepted ratio of direct costs (compensation and medical bills) to indirect costs is 1:14. So whenever an accident occurs, a direct cost (for example) might amount to $100. Indirect costs would then run to $400.

As for other benefits, the program gets supervisors and workers into the habit of planning work—and work habits—in advance. It brings better understanding of problems that surround all aspects of workers' jobs. It not only prevents serious injuries, but gets jobs done better and faster.

Supervisors and workers contribute safety suggestions that aid in the overall program. Here are some examples: The contest-winning Hartford, Wis., plant made a point of installing large safety mirrors in strategic locations to alert employees on maintaining the proper safety attitude. It periodically posts new safety material and monthly contest reports on either side of the glass.

The contest's success sparked the company into upping the prizes from $200 to $250 for small seasonally operated plants, from $300 to $500 for seasonal, and from $500 to $750 for year 'round.

To compete, plants must submit a report to headquarters. Winners are then judged on the basis of: (1) Frequency rate for the year, (2) average frequency rate for the three preceding years, (3) man-hours since last reportable lost-time injury, (4) safety committee report, (5) plant manager's resume, and (6) number of safety award suggestions.

Something else: Libby's safety activities have extended outside of the company. Those on the bandwagon have actively participated with state canners' associations. In numerous cases, the company's project leaders have interested these associations in safety programs and practices. Result has been an industry-wide reduction in insurance rates and this, in turn, has benefited the company. It's helped reduce the company's insurance premiums.

27 Points to Check

Here's a list of key factors Libby's safety committee looks for on plant-inspection trips:

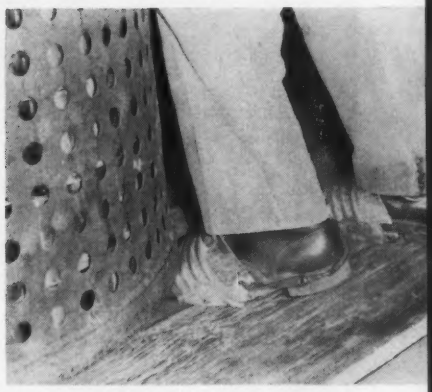
- . . . Maintenance of safeguards.
- . . . Tripping hazards in aisles.
- . . . Ladders and piling of materials.
- . . . Insufficient light for safe work.
- . . . Burred chisels and hammers.
- . . . Blocked fire escapes.
- . . . Water and sand in fire pails.
- . . . Date on fire extinguisher tags.
- . . . Lighting in stairwells.
- . . . Toe board on working platforms.
- . . . Bottles on window sills.
- . . . Goggles on grinder operators.
- . . . Necessary protective clothing.
- . . . Splinter behind rip saws.
- . . . First-aid for cuts and scratches.
- . . . Posting of safety bulletins.
- . . . Grounded electrical equipment.
- . . . Condition of electrical equipment.
- . . . Operation of elevator gates.
- . . . Use of freight elevators.
- . . . Flanges on emery wheels.
- . . . Guards on buffing wheels.
- . . . Serious accident areas.
- . . . Window cleaning procedures.
- . . . Replacing electric light globes.
- . . . Proper use of solvents.
- . . . Unguarded machines.

Up to the Plants

At Libby, the headquarters group (industrial relations division) drew up the generalized program only. Its biggest job was to sell the idea to plant management. This is did at a series of meetings, by discussing the relation of accident costs to plant overhead. Once plant managers "bought" the idea, it was up to them to carry out these 13 details:

. . . Introduce the safety contest and its objectives to plant personnel by passing out contest rules and safety stickers.

. . . Set up a rotating plant safety committee, assign each member responsibilities.



EMPHASIS is on instructing workers to wear safety equipment as a protection against injuries. Example is this steel shoe guard. If a heavily loaded retort crate drops, it will prevent crushing of a worker's foot.

. . . Instruct committee to make periodic plant safety inspections, and issue monthly reports to plant manager.

. . . Follow up on reported unsafe conditions and practices, and see to it that they're abolished.

. . . List safety key points for all jobs. Then go about using practical safeguards.

. . . Offer and suggest use of protective clothing by plant personnel, providing these items for workers assigned to hazardous jobs.

. . . Remind workers of the contest—such as by posting latest contest standings to keep employees watching the score, and by displaying safety posters in vital spots throughout the plant.

. . . Discuss key safety points with workers.

. . . Address safety letters to all employees, congratulating them on their safety record to date and encouraging them to keep striving for an accident-free year. And, at the same time, enclose safety messages.

. . . Keep the fighting accent on lost-time accidents. Discuss them in detail with key personnel, and try to prevent repeats.

. . . Facilitate employees' purchase of protective apparel. Case in point is making arrangements for a shoe company's shoemobile to visit the plant for the purpose of selling safety footwear to employees. And then, to stimulate interest in their purchase, let the company kick in for part of the purchase.

. . . Periodically attach insurance company's safety pamphlets

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. . . Keep supervisors "in the know" by supplying them with the National Safety Council's monthly publication, National Safety News.

Building Teamwork

Everybody takes part in a plant's safety-program activities. The committee is chairmanned by the safety supervisor, who reports directly to the plant manager and to the headquarters' divisional safety committee. Latter's made up of the five division heads—production, field (agriculture), industrial relations, engineering, and industrial engineering.

Directly above this committee is the central safety group comprising company executives, the medical director, and the manager of insurance.

The division safety committee holds monthly meetings in which it reviews accident statistics, discusses accident experiences in plants, and offers solutions.

These eight suggested solutions are typical:

1. Better scheduling of work load, which would include arranging of planting dates.

2. Rotating plant safety committee chairmen, with the object that injection of different men's angles and attitudes will further promote good production, together with emphasis on safety.

3. Devoting more time to daily and monthly accident statistics, making them available for review by plant and departmental personnel.

4. Reminding members of division safety committees to "talk safety" when visiting plants.

5. Checking on plants' use of disabling injury markers ("X" marks-the-spot stickers pasted in plant areas where disabling injuries occurred).

6. Proposing use of hard hats and overhead protection for operators of lift trucks.

7. Arrange to include special points for consideration when judging winners of the safety contest. Examples are actual measures taken in a plant to remove hazards, improve safety communication, etc.

8. Inaugurating a Safety Maintenance Week program. This specific week would be set up by the plant manager, with key arrangements for maintenance crew men, and other employees, to remove hazards, install guards, color-coat pipes, put up safety displays, etc.

Now the matter of getting the last measure of protection into the safety program:

Plant committee members are selected to serve on a monthly basis, and they're provided with safety badges. Size of the committee depends upon the plant.

Each committee has a chairman (safety supervisor), who reports directly to the plant manager. Responsible to this chairman are maintenance department, foremen, and employees. All have assigned responsibilities. Let's consider each in order:

Plant manager: Being fully responsible for the welfare of all employees, he authorizes necessary expenditures for safety, and he informs his personnel on the safety policies formulated by the company. He also participates in the safety program.

Safety supervisor: He's the "workhorse secretary" who serves in a staff capacity (without line authority) to coordinate safety activities. His specific jobs are to maintain and analyze accident reports, issue reports on safety performance and accident trends, check compliance with safety laws and codes, and supervise (appraise, too) the accident investigations. He also develops and conducts safety-education programs for supervisors and workers. Further, he plans and directs periodic safety inspections.

Maintenance department: It teams with the committee, safety supervisor, and foremen. Duties are to execute work orders promptly; cooperate in devising safety equipment, guards, etc.; and maintain from a safety standpoint a regular maintenance schedule and records on all equipment.

Foremen: Serving on the safety committee, they're responsible for the safety of their crew and the maintenance of safe working conditions. They train men to work safely, and they discuss with individual workers. They enforce good housekeeping, see that adequate lighting and ventilation is provided, check on workers' use of protective equipment and clothing, and obtain first aid for the injured.

Employees: They, too, serve on the committee. However, each observes safety rules and practices, reports unsafe conditions or practices, and offers safety suggestions. Also, in the interests of safety, each works on the premise that if a job isn't understood, it's not to be undertaken. (End)

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Southwestern brewery's mechanization of bottle shop and warehouse minimizes manual labor, streamlines operation

PALLET LOAD OF EMPTIES, removed from trailer, is deposited on apron of vertical lift. Conveyor then feeds load into lift which raises it to 2nd floor, returns for another load in 1 min.

Latest Handlers Automate Flow

PART I—
Empty Bottles and Cans

BY MODERNIZING its bottle shops and warehouses for completely palletized operations, Lone Star Brewing Co., San Antonio, Tex., has eliminated all manual handling in manufacturing and shipping.

Except for attendants of non-automatic units in these departments, personnel have been reassigned to more productive duties elsewhere in the plant.

Handling of bottled beer represents a 2-way movement consisting of: (1) Inbound return shipments of empty bottles in cases, and (2) outbound shipments of full bottles in cases.

Although canned beer does not involve a return of empties, it too represents a 2-way movement: (1) Receipt of empty cans, and (2) shipment of full cans in cartons. For both types of containers, therefore, there is both an inbound movement of empties and an outbound one of fulls.

It is largely the standardization and synchronization of these operations that pave the way for wholly mechanized handling. And this can be fitted into existing buildings, as was done at Lone Star, almost as readily as in new ones especially designed for automatic handling.

With the transition from manual to palletized handling, the concept of the unit load moved from one case to one ton. This king-size unit can be handled readily with such devices as fork trucks, case palletizers and depalletizers, automatic interfloor lifts, bulk can depalletizers, carton packers, and powered pallet conveyors. By interposing these devices at strategic points along incoming and outgoing carriers, cases no longer need be handled manually.

Workability of a new handling system within existing buildings is inevitably the criterion in modernizing existing buildings. Optimum investment for building alterations and for purchase of new handling equipment are other basic factors. Such an investment should pay for itself out of savings within a two-year period.

Ceiling clearances in storage areas should be high enough to permit stacking 6-ft.-high pallet loads two or three tiers high, while leaving some 18 in. for water sprinklers and load-maneuvering. In some low-ceilinged multi-story buildings, this may mean tearing down intermediate floors to permit economical high-tiering of pallet loads.

9 Basic Factors

Principal factors in re-designing the brewery at Lone Star were:

1. Congestion in interfloor conveyor runs due to inflexibility of one-way flows.

2. Cube space lost to overhead conveyor lines, and to low stacking of pallet loads because of limitations in floor-load capacities.

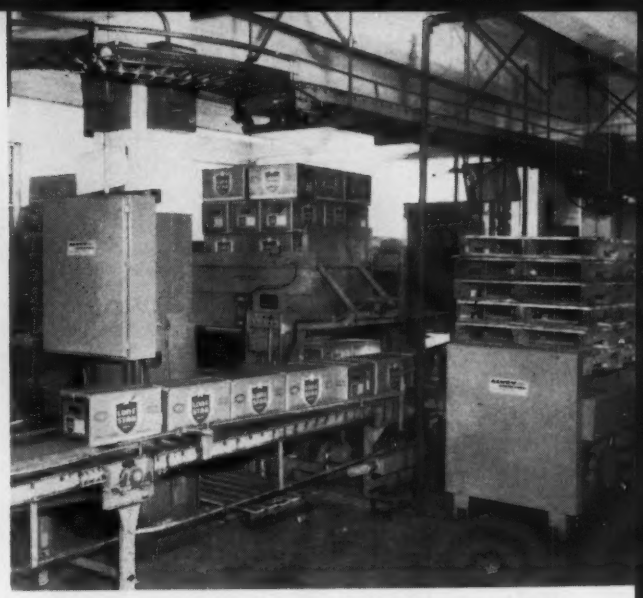
3. Removal or relocation of structural columns along the path of main traffic aisles for fork trucks.

4. Cutting of aisle doorways through building walls.

A. T. GAUDREAU

Gaudreau Associates, Weston, Conn. (First three photos courtesy Alvey Conveyor Mfg. Co., last two courtesy American Can Co.)

VERTICAL LIFT (right) automatically discharges loaded pallets onto powered roller conveyor that moves them to depalletizer.



DEPALLETIZER divides load into individual cases which are conveyed single-file to uncasers at soaker-washers in bottle shops.

5. Erection of unloading and shipping docks.

6. Installation of automatic lifts for pallet transport.

7. Load-bearing capacity of existing floors to withstand heavier storage of palletized loads and traffic of heavy fork-trucks.

8. Direction of building and property expansions.

9. Vehicular approaches to buildings, and yard facilities for carrier movement.

Problem of inter-floor handling has been virtually eliminated by automatic, fast-operating, vertical conveyor lifts. With such units, incoming supplies such as bottle crowns in cartons and caustic soda in drums, can be spirited to another floor at the rate of one load a minute. No longer is it necessary to wait for slow-moving freight elevators, nor to suffer traffic congestion at these points. In fact, many of these old elevators have been dismantled in palletized breweries, and their shafts used for vertical lifts capable of handling loads of 3,000 lb. and over.

The Lone Star Brewery, in the million-barrel-a-year class, distributes throughout Texas and in bordering states. It operates four bottling and two can lines in two separate bottle shops with warehouses located on the second floor of each.

No new buildings were required to convert this brewery from a case-by-case to a ton-by-ton handling basis through palletization. Structural alterations were all made on the outside of buildings thus leaving interiors virtually untouched except for elevator replacements. These alterations consisted of:

1. Converting a double-track roadway separating the two bottle shops at ground level into a housed-in traffic platform at elevated shipping-dock height. This platform unified the first floor of the two bottle shops at trailer-bed level and provided a continuous one-floor level throughout both shops.

2. Constructing a canopied elevated shipping dock for loading highway trailers and local delivery trucks along one entire side of the two newly-joined bottle shop buildings.

3. Connecting the second floor of both bottle shops by a walled-in causeway accommodating a wide traffic aisle for fork trucks traveling from one building to the other.

4. Roofing over the housed-in platform joining the two bottle shops at shipping-dock level.

5. Replacing freight elevator in one bottle shop with two automatic conveyor lifts contiguous to the trailer shipping dock.

With these alterations completed, the brewery was ready to install various automatic handling devices.

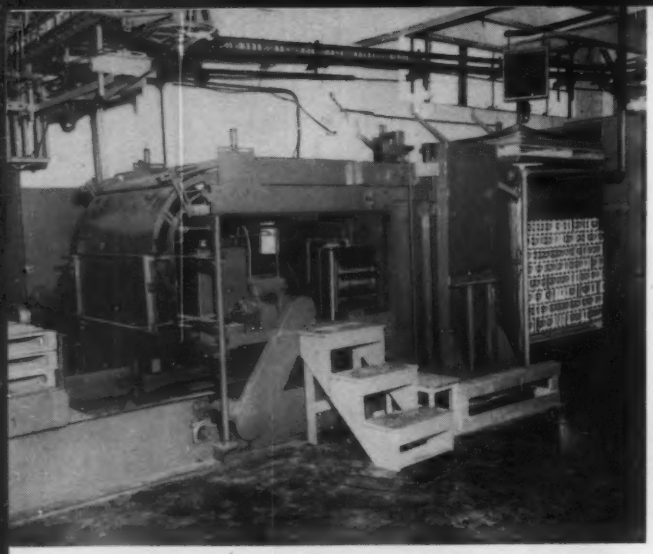
Empties on Pallets

Cases of returned empty bottles are received, for the most part, in palletized loads on highway trailers, rail cars, and city route trucks. Those received hand-stacked are transferred to pallets inside carriers so they can also be handled by fork trucks. Pallet loads range 5 to 7 layers depending on inside height of trailer body. When received in boxcars, loads are usually 8 layers high.

When a highway trailer at the dock is ready for unloading, a fork truck is driven inside the body, picks up a pallet load, and backs out onto the truck dock. It travels a short distance and deposits load on intake apron of nearest vertical lift at dock end of bottle shop (see lead photo). This elevates the loaded pallet to 2nd floor.

Here it automatically discharges onto a powered accumulating conveyor. Vertical lifts contain automatic controls which can be set to a definite pattern of travel. For example, they may raise a load of empties or fulls to the 2nd floor, discharge the load, and return empty. Or they may elevate a load of empties and return with a load of fulls. One minute is all that it takes for each round trip.

Empties emanating from the lift travel on a powered roller conveyor to a case depalletizer. Or they may be picked up by fork



BULK CANS arrive in double-tiered pallets (extreme right). They are detiered by fork truck, unwrapped, and fed to depalletizer.

truck and moved to storage. The automatic depalletizer feeds cartons of empty bottles to three individual conveyors which supply the four bottling lines on floor below.

When a pallet is first positioned inside the depalletizer, the roller table rises to allow two side clamping arms to grasp entire load of cartons. Load remains elevated while table is lowered to permit discharge of empty pallet to automatic stacking device.

Lift table and clamping arms operate simultaneously. Arms grasp and raise the load but leave bottom layer of cases on table which then returns to lower position so cases can be discharged onto conveyor line. This layer-by-layer operation is continued until entire load has been removed.

As each layer of cases is discharged onto conveyor line, cases pass through a pivoting device which makes them all head lengthwise. From this point, they are dispatched in a steady stream to one of the conveyor runs leading to bottle soakers downstairs. By means of pushbuttons, depalletizer operator directs flow of cases from one conveyor run to another as needed.

Empty bottles are inspected for defects before entering uncasing unit of soaker. Uncaser automatically unloads bottles by means of 24 mechanical grip fingers which gently remove bottles from carton and place them on accumulating table.

Empty cartons are conveyed to a cleaning operation on their way to packing machines at end of each production line. Filled cases are then conveyed to a battery of three palletizers centrally located in newly-acquired floor area joining the bottle shops.

Cans Handled Automatically

Handling of incoming and stored empty beer cans has always posed a seemingly insurmountable problem because of the fragile state of these containers. Practice for years has been to pack them in reshipper cartons at the can factory, and to hand-stack these cartons roof-high inside boxcars or highway trailers for shipment to the brewery.

At the brewery it was necessary to set up a network of portable conveyor sections leading from inside the boxcars and trailers. These conveyor runs cut across shipping docks thereby blocking passageways for fork trucks and other traffic. They extended down long lanes to connect with building-mounted powered conveyors which led to can-uncasing and unscrambling machines. Emptied reshippers then had to be conveyed to can packers.

Furthermore, handling cartons of empty cans necessitated permanent crews of throw-on and throw-off men along conveyor lines, particularly when cans had to be stored before being fed to production.

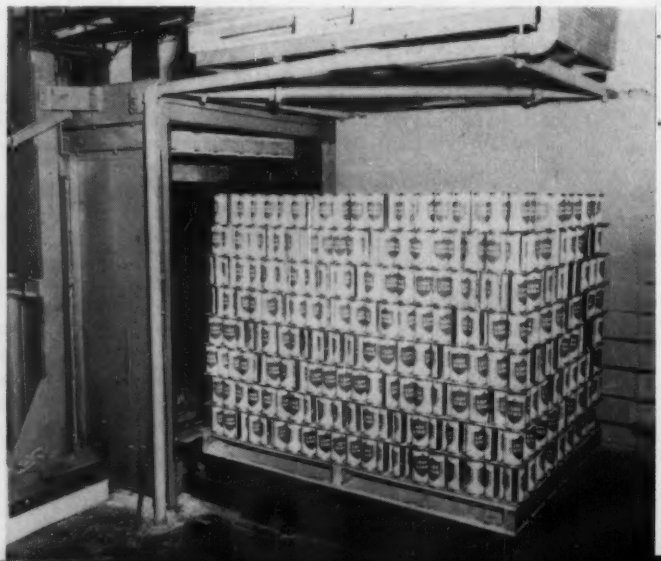
Now, however, American Can Co. has developed a method that dispenses entirely with reshipper cartons, case conveyor lines, manual case handling, can-uncasing machines, and can unscramblers in receipt, storage, and feeding of empty cans (FE Nov. '59, p. 60). Cans arrive from company's local factory in pallet loads tiered two high on trailers. Loaded pallets are enclosed in reusable corrugated paperboard containers.

They move from the roller conveyor bed in deck of trailer onto another roller unit on receiving platform where a slight push rolls each 2-tier unit into the building. Here a fork truck detiers pallet loads and places them, one at a time, on feed conveyor of can depalletizer.

Overwrap is removed and the load backed up against a squaring board to straighten the sides. Loads are 48 in. high and comprise nine layers of 350 cans (3,150 cans per pallet). Each layer is separated by a sheet of chipboard. When not fed directly into the machine, pallet load is picked up by fork truck and delivered into tiered storage near machine area.

Depalletizer is easily operated by one man and feeds empty cans via cable conveyor directly to a filler at a speed of 600 cpm. The only other worker needed to complete flow of cans from incoming trailer to filler is the fork truck operator who unloads trailers, handles pallet loads, and feeds them into unloading machine.

(End)



PALLET LOAD is moved into depalletizer on powered chain conveyor. Here cans are swept off chipboard separators, fed to fillers at 600 cpm.

Grinnell-Saunders Food and Beverage Valves on syrup at approximately 5 lbs psig at 7-UP Bottling Company, Dallas, Texas. Valves operate an average of 5 times daily. Capacity of plant is 575 bottles per minute.

7up Dallas plant reports:

No leaks, no sticky valves, no diaphragm changes for two years with Grinnell-Saunders Diaphragm Valves

Prior to the installation of Grinnell-Saunders Food and Beverage Valves at the 7-UP Bottling Company plant in Dallas, plug cock valves were used. Following approximately 3 months' service, these former valves began to leak — eventually necessitating expensive regrinding to improve the situation.

Since installing Grinnell-Saunders Diaphragm Valves two years ago, there have been no leaks, sticking, or need for costly regrinding. There have been no diaphragm replacements, either. This — plus the fact that the original plug cocks cost almost twice as much as the Grinnell valves — is why this 7-UP plant decided to standardize on Grinnell-Saunders Valves *throughout!*

Grinnell-Saunders Food and Beverage Valves are normally furnished with stainless steel bodies, white enameled bonnets, and with diaphragms of synthetic white rubber, which impart no taste or color — and which are undamaged by cleaning solutions. Other body, lining and diaphragm materials available to meet a variety of service conditions.

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1. TODAY, lettuce is picked, trimmed, and packed in fiber-board cartons right in the field.

Efficient Handling Cuts Vacuum-Cooling Costs

Field packing, improved packaging, palletization—they all contribute to a striking 25% reduction in cost of shipping fresh lettuce

A 25% REDUCTION in cost of shipping vacuum precooled leafy vegetables has resulted from improved handling methods and substitution of fiberboard cartons for wooden crates.

When vacuum precooling was first introduced (FE, Oct. '52, p. 104), lettuce heads in the field were cut, thrown into trucks and taken to a packing shed. Here, they were sorted and packed in wooden crates lined with oiled paper. A layer of crushed ice was placed over the lettuce before container was closed. Crates were then loaded into refrigerated cars and 10,000 lb. of crushed ice was blown into each car.

2. FILLED CARTONS are loaded on flat-bed truck. Latter holds 320 cartons (½ refrigerated car).

Now, however, large trucks move through the fields as experienced cutters pick the heads of desirable size and shape and pack them in 24-head fiberboard cartons (Photo 1). From here the heads are not touched by human hands. Less than perfect ones are left in the field as culls which are either sold as cattle feed or plowed under.

Next, workers placed the filled cartons on pallets, each holding 32 cartons. Ten pallets fill a truck. Now the lettuce is ready for a quick trip to the precooling plant (Photo 2).

Typical of this operation is the Crystal Ice & Cold Storage Co's., "Chill-Vac" plant at Glendale, Arizona. One of eight such plants in the Salt River Valley and surrounding area, it boasts eight vacuum tubes with a capacity of 10-12 cars per hr. Pumps are utilized for pulling vacuum on the tubes.

Upon arrival at the plant, 10 pallets are transferred by fork lift truck (Photo 3) to a 45 ft. dolly. Filled dolly is pushed into a vacuum tube which is then sealed by closing the doors at each end (Photo 4). Pumps and started and pressure reduction begins.

When pumps have reduced pressure in tube to 0.092 psi., every head of lettuce in it has been cooled to 33F.

3. AT COOLING PLANT, huge fork-lifts transfer entire truckload to 45-ft. dolly.

4. LOADED DOLLY is pushed into vacuum chamber, then doors are closed and pumps started.

Cycle is then complete and pumps are cut off. Further reduction in pressure could freeze the heads.

During the cooling cycle, water vapor from the lettuce rises to top of tube where ammonia coils condense it. Condensate flows into a water trap to be drained at end of cycle. Up to 800 lb. of water can be removed during a cycle which lasts from 16-24 min. depending on field heat of lettuce and solidity of the heads.

When dolly is rolled from vacuum tube it is moved to a belt conveyor on which cartons are moved to waiting pre-iced refrigerated cars (Photo 5). Because the process chills rapidly, deterioration caused by wilting is reduced. The dry cold tends to keep lettuce crisp, solid, and free of slime and tip burn. In a matter of hours, cars are rolling to consumer markets.

Packaging and handling costs to grower and shipper have been reduced 25% by this process and the fiberboard cartons. Outlays for large packing sheds and expensive equipment for sorting, conveying, and making crates are unnecessary. Thus, crews of handlers have been eliminated.

Savings in transportation and handling, and from reduced spoilage more than offset the large capital outlay.

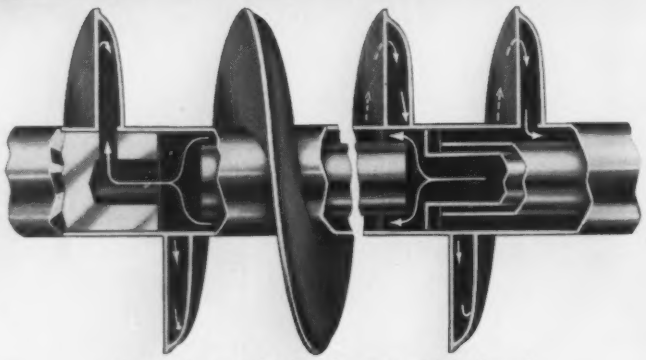
In addition, this revolutionary new method of handling and cooling has offset rising costs of labor and marketing. (End)

5. UNLOADED FROM DOLLY, cartons are quickly conveyed to pre-iced refrigerated car.

LAST YEAR - COOLING 1.6 BILLION POUNDS/YEAR

THIS YEAR COOLING 2.4 BILLION POUNDS/YEAR —A 50% INCREASE IN Holo-Flite* CAPACITY IN THE SUGAR INDUSTRY ALONE!

In just one year the Sugar industry alone has installed enough additional Holo-Flite equipment to cool 2.4 Billion pounds a year—*a 50% increase over the 1.6 Billion pounds cooled by Holo-Flite equipment a year ago!*



Arrows show how heat-transfer medium flows through core and hollow blades of screw, cooling, drying or heating processed material as it moves along in continuous bluk flow.

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Holo-Flite*

Applications in Your Operations...

Holo-Flite combines screw-conveyor and heat-exchanger into one efficient unit that cools, dries or heats materials in *continuous* bulk flow. It has many important applications throughout the process industries—applications that save time, save space, save money and boost product quality on a wide range of processing problems. Look over the multiple savings Holo-Flite is making in sugar processing. Probably comparable savings can be made in *your particular* process operations. Why not investigate today?

*"Holo-Flite" T.M. Reg.

HOLO-FLITE

IN-PROCESS USE

- Holo-Flite cools granulated or powdered sugar with equal ease!
- Discharge can be directed into multiple points of use, and dehumidified air is seldom necessary!
- Ideal for pre-cooling sugar going into cake mix and confection-coating processes!
- In candy making, Holo-Flite cooled sugar prevents distillation of essences and delicate flavors!
- With Holo-Flite, sugar is cooled as needed, eliminating costly bulk refrigeration prior to use!

HOLO-FLITE

BASIC SUGAR PRODUCTION

- Sugar cooled by Holo-Flite is free-flowing for quick, simple bulk car loading!
- Quality is uniformly high without perceptible crystal degradation!
- Cooling method is dust-free, eliminating need for troublesome bag collectors!
- Efficient Holo-Flite design permits easy clean-out (although this is generally unnecessary)!
- Holo-Flite can easily be mounted on loading bridge over hopper cars to maintain outlet temperature levels from cooler to car!
- The Holo-Flite heat exchange principle is equally adaptable to use of cooling tower water, refrigerated water systems or recirculated refrigeration media!

Let us send you descriptive literature and make recommendations for your processes. No obligation, of course!

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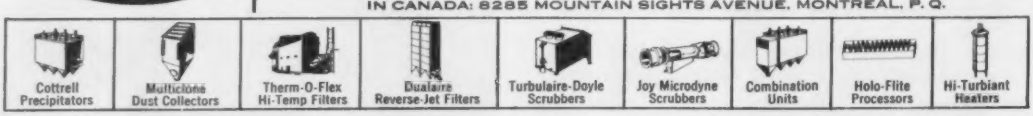

To Cut Motor Failures Keep Them Warm

Blanketing electric motors to keep them 45 deg. warmer than surrounding air temperatures, will solve the problem of moisture condensation, in cold rooms.

Shortly after our company, Colonial Provision Co., completed its brand-new multiple-purpose building in Boston, it was found that electric motors operating intermittently in a cold atmosphere were breaking down.

When 7 large motors—ranging from 40-100 h.p.—failed we knew that something had to be done. Simply enclosing the motors in metal housings wasn't enough, because the moist air had to be completely shut out. Installing electric heating coils in each was impractical too.

Eventually, I hit upon the idea of electric blankets, which can be wrapped around the motors and hooked up to 110-220v. current to maintain a higher temperature than the surrounding air.

I tested blankets on a 100-hp. drive motor, a 50-hp. unit, a 48-hp. general purpose motor, and numerous smaller ones, and there hasn't been a single failure or slightest trouble since. Motors are kept 45-50 deg. above air in plant by means of thermostats.

The blankets, are made of a lacework of tiny heating wires, embedded in a soft rubber. Each is equipped with a rheostat for changing temperature when desired.—*William Elms, Plant Engineer, Colonial Provision Co., Boston.*

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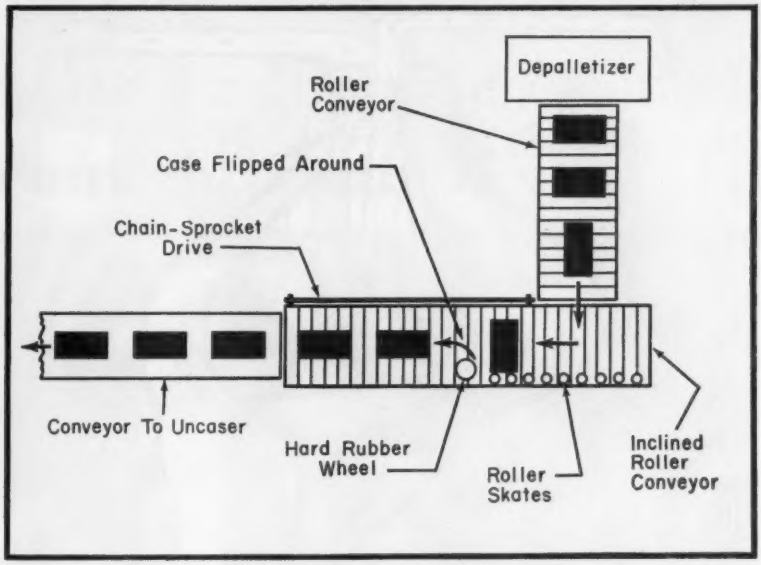


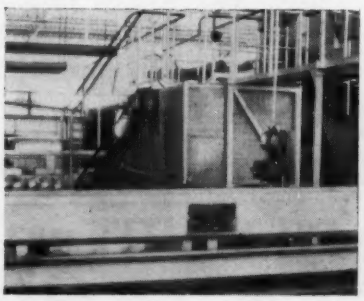
Automatic Case Arranger Saves Labor

When cases of empty beverage bottles are single-file discharged via live-roller conveyor from depalletizer, they're usually picked up by a transfer belt that feeds them to the uncaser. This transfer conveyor's usually wide enough to handle the cases that are discharged with long sides parallel to take-away conveyor. But cases with short sides parallel to the conveyor must be manually rearranged to prevent back-ups and downtime.

Here's a simple way to eliminate this need for manual rearrangement, and it saves belt width, too: At right angle to roller conveyor carrying cases from depalletizer install a similar 10-15-ft. conveyor. But position it for a gradual incline from 20-30 deg. to horizontal — point where conveyor belt picks up cases to deliver them to uncaser.

To reduce friction in right-angle transfer of cases (and to make them move more freely), horizontally mount equally centered roller skates (about 3-in. dia.) on angle-iron framework directly above and on the "back-stop" side of inclined roller conveyor. Skates are mounted 6-10 in. above roller conveyor, depending on height of shipping cases. On this framework install a vertical rod (½-in. dia.) with free-wheeling hard rubber roller (1x4-in.).

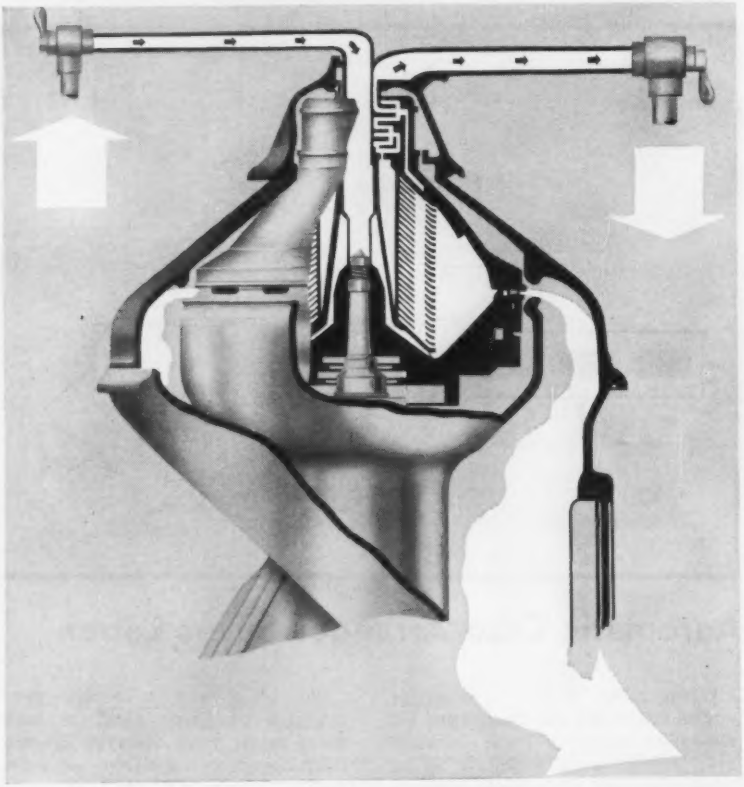
Roller is struck by those cases arranged too wide for take-away conveyor belt going to uncaser, and then given a 90-deg. rotation to shorten case width on belt. Attach on top of framework on other side of (and above) inclined roller a narrow endless chain driven from sprockets.—*FE Staff*



'Files' Grading Screens For Safety, Easy Changing

Valuable, stainless steel, size-grading screens are easily damaged, misplaced or stored in such a manner that the desired kind and size cannot be easily found. We solved these problems by building a "screen filing cabinet" as an integral part of the carrying structure of a catwalk in our plant, close to the grading machine. Screen

FLUIDICS* AT WORK



Why the Titan can solve your tough centrifuging problems

Start with the all-important question of *separating* power.

Compare what the Pfaudler® Titan Superjector gives you with any other centrifuge—up to 7580 times gravity. This is much more force than most continuous centrifuges offer.

Next, consider how important continuous operation is. With the self-cleaning Titan you can make your separation process part of a continuous-flow operation.

Hydraulic controls for opening slots result in instantaneous ejection of solids. Note: We said slots, not nozzles. Slots that will handle particles up to ⅛" dia.; slots that won't clog; slots that keep down time to the minimum.

You get high capacity, too—up to 6000 gallons per hour.

It all adds up to the fact that the Titan can solve even the most difficult separating problems. Like separating two liquids and a solid simultaneously; handling solids that are only slightly heavier than liquids, liquids that are highly viscous or aerated, particles that are fine, slimy or abrasive.

Our Bulletin 946 gives you complete details.

Test, anyone? We'd be happy to test your products in our Engineering Test Center or in *your* plant with a portable production unit.

Address inquiries to our Pfaudler Division, Dept. FE-90, Rochester 3, N. Y.

*FLUIDICS is the Pfaudler Permutit program that integrates knowledge, equipment and experience in solving problems involving fluids.

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sizes are marked on diagonally opposed corners, filed according to sizes, and noted in a register. We now change screens in a jiffy. *G. A. H. Wehrmann, Factory Manager, Tulbagh Fruit Industry (Pty.) Ltd., Tulbagh, Union of South Africa.*

Easy-Does-It Loader

Used to be that we had to separate juice from berries by dumping 30-lb. tins of frozen strawberries onto screens mounted over wooden barrels. Took 40 cans to supply enough berries and drained juice for each batch run through our vacuum-type preserve cooker.

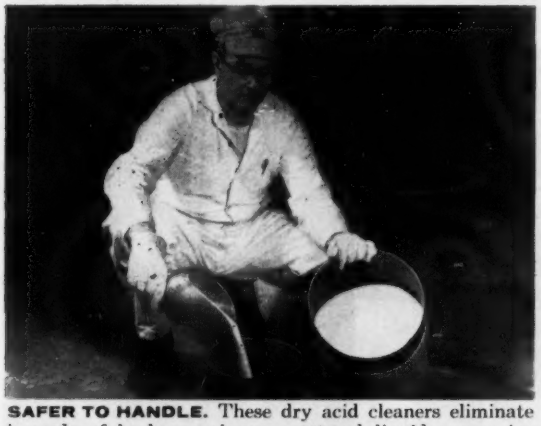
Juice was then dumped into 300-gal. stainless steel pre-heat kettle along with sugar and corn syrup. Here batch was heated to 125-130F. before it was pulled into vacuum pan for concentrating to 85% solids. Berries were then dumped into the pre-heater and sucked into vacuum pan. Batch was vacuum cooked to 68% solids, ready for filling into jars and subsequent handling.

Our easy-does-it trick is to dump 40 cans (30 lb.) of frozen strawberries at a time into a specially built perforated stainless basket (photo) set above pre-mix kettle. Permanently mounted to top and sides of basket are two lifting lugs, through which chains are secured for raising and lowering (into kettle) by electric hoist.

Once juice drains into pre-heat kettle and is sucked into vacuum pan along with corn syrup and dissolved sugar, berries are then dumped into kettle. Dumping's accomplished by unlocking a pair of stainless perforated hinges (arrow) that are built into the bottom of the basket.

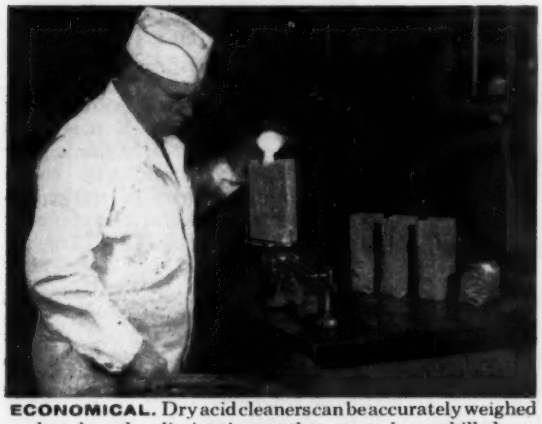
Juice takes 10-20 min. (depend-

For fast removal of scale and protein deposits from cooking vessels, pipelines, evaporators, use safer **dry acid** cleaners based on **Du Pont Sulfamic Acid**



SAFER TO HANDLE. These dry acid cleaners eliminate hazards of broken carboys, spattered liquids, corrosive fumes. The cleaners are dry, nonfuming powders, packed in easily handled, disposable drums.

EASIER TO USE. Just scoop out required amounts of dry acid cleaner and add to make up tank. Often can be added directly to equipment being cleaned . . . no elaborate equipment or specially trained labor required.



ECONOMICAL. Dry acid cleaners can be accurately weighed and packaged—eliminating costly overuse by unskilled employees. These concentrated cleaners, undiluted by water, save on shipping, handling and storage costs.

GENTLE on stainless steel in removing scale and deposits. Thoughtful personnel use sulfamic-based cleaners without fear of stress cracking or pitting of expensive equipment so easily induced with hydrochloric acid.

Ask your supplier for safer, effective cleaners based on Du Pont Sulfamic Acid, or mail coupon for additional information and names of formulators who offer these compounds.

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Please send me ☐ sulfamic acid general equipment cleaning bulletin; ☐ names of formulators offering cleaners based on sulfamic acid.

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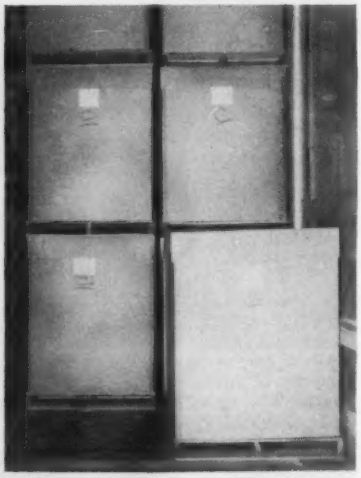
ing on frozen condition of strawberries) to drain into kettle. Whole operation saves 20-30 min., gets production to fillers that much faster. Also, we're able to feed more whole berries into vacuum pan. And we don't tie up a lot of space with wooden barrels that must also be cleaned. — *Jerry Schultz, Production Manager, Wm. Barnes, Inc., Minneapolis.*



Cures Out-of-Stock 'Bug'

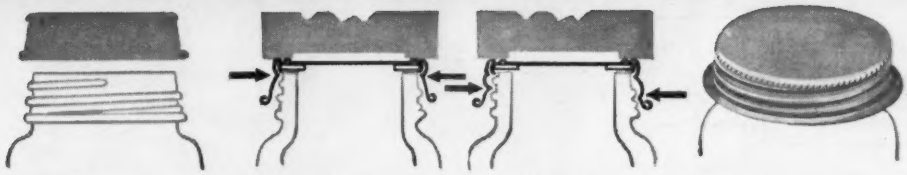
These new bulk-containers offer frozen food packers a means to beat the out-of-stock bugaboo. The 1,500-lb. corrugated units (Gaylord container) may be stacked 3-high without special strapping or outside supports. They are reusable, and can be stored flat when empty.

At Oxnard Frozen Foods Corp., Oxnard, Calif., frozen lima beans in Plyofilm bags are stored in these containers. Subsequently, this set-aside stock is packaged to supply customer shortages of any size and brand wrapper.— (FE Staff.)

PRACTICAL TIPS

Malathion is recommended as protectant on stored grains by USDA's Stored Product Insects Branch. Used preferably as a spray, it offers up to a year's protection for commodities stored under reasonable conditions of temperature, humidity, and sanitation. Studies of flavor, odor, and baking quality of flour from treated wheat reveal no adverse effects.

TAILOR MADE!!



The unthreaded aluminum closure is placed on the jar and seated on sealing surface with a controlled uniform pressure.

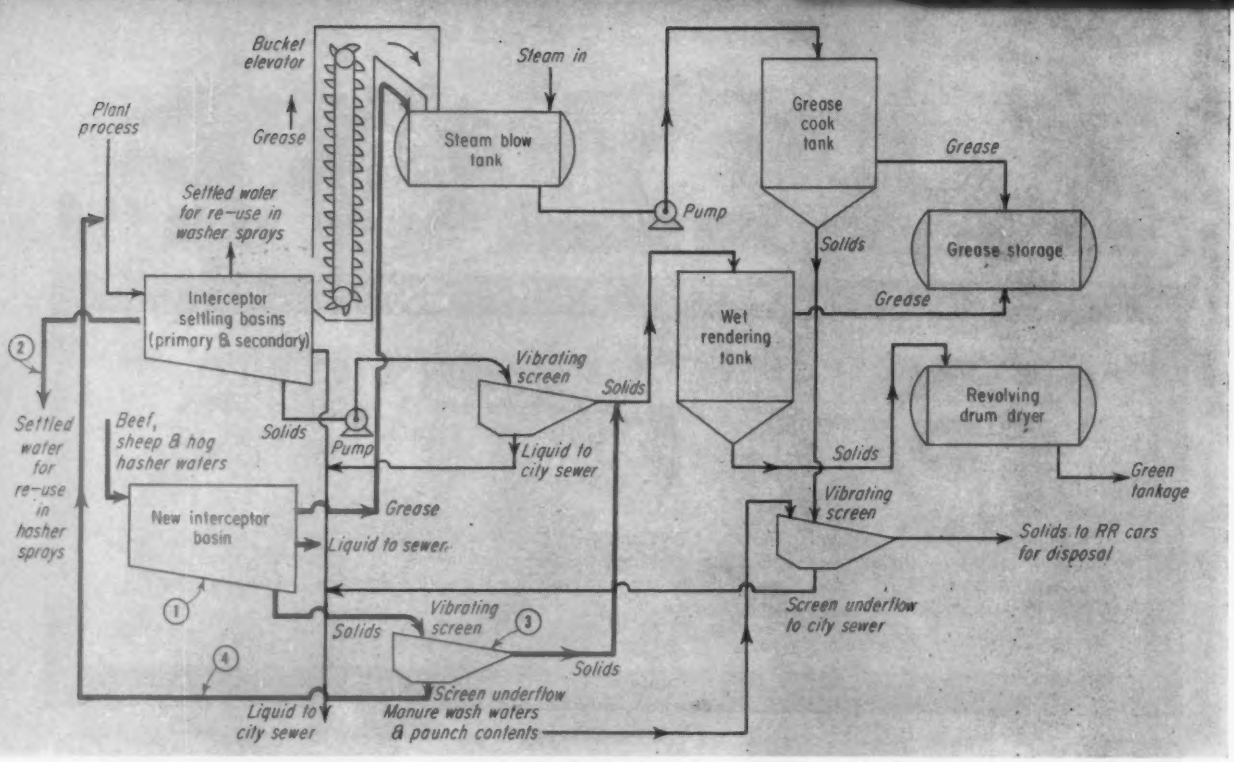
Rollers revolve and form the closure by shaping the skirt against the glass threads. Since the protective liner is not turned against the glass lip during sealing, there is no cutting or scoring of the liner and no danger of air leakage.

ALCOA'S EXCLUSIVE ROLL-ON ALUMINUM CAPS PROTECT BABY FOODS LIKE NEVER BEFORE!

Alcoa's Roll-On process means that every aluminum cap is tailor-made to fit each jar, regardless of size or shape. And because of this individual fitting, the contents of every baby food jar is getting the best protection available today.

Acid-resistant, corrosion-resistant aluminum caps are friendly to food. Straight meats cannot affect the aluminum cap liner. And Alcoa® Aluminum Caps stay bright and clean . . . never tarnish. So where protection counts . . . you can count on Alcoa Aluminum Caps. Nine out of ten mothers prefer them.

Better Packaging
ALCOA ALUMINUM
Aluminum Closures



FOUR MODIFICATIONS (in color) which helped Rath improve waste recovery are: (1) New basin for segregated hasher waters; (2) recirculation of interceptor waters; (3) new vibrating screen for solids recovery; and (4) rerouting of screen underflow mixed with raw effluent fed to interceptors for additional settling.

Boosts Waste Plant Performance

Packer modernizes disposal system for increased capacity to save valuable byproducts. And municipal sewerage overload is relaxed

MODERN MEAT PACKERS, who can't afford to write off waste as unrecoverable, may be hit hard when their treatment facilities become overloaded and efficiency is disrupted.

Profitable byproducts—inedible grease and green tankage (proteinaceous solids for animal feed)—are lost. And municipal sewage plants may be overtaxed.

Faced with this problem, Rath Packing Co., Waterloo, Iowa, modified its waste facilities to handle increased discharge (500 to 1,500 tons since '40). Here's how this has paid off:

- **Annual increase of almost** $55,000 in the amount of salable grease recovered. Quality's better, too, since it's recovered fresh.
- **Daily water savings** — about ¾ million gal.—through re-use of settled waters.
- **About 25% reduction in load discharged** to city's sewage system.
- **Increase in green-tankage recovery.**
- **More efficient recovery of grease** in new 60,000-gal. interceptor, using mechanical instead of manual methods.

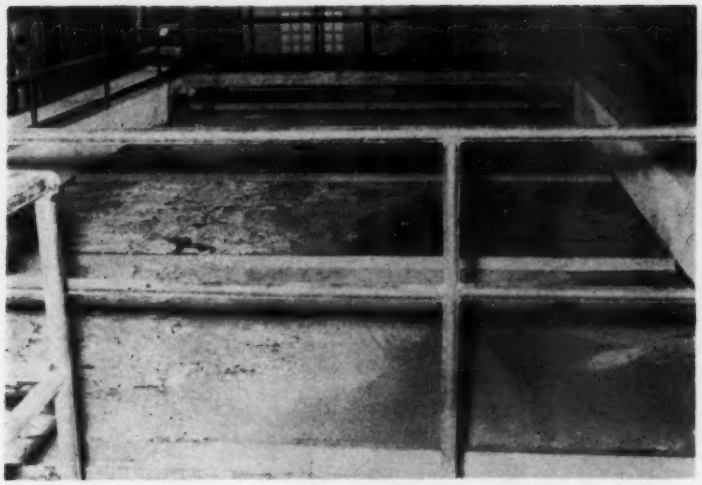
At first, the company handled the increasing load by shortening detention times in its four interceptor settling basins (400,000 gal. capacity) and increasing velocities of waste flow.

Result was a costly decline in recovery of fats, solids, and other organics that contributed to 5-day BOD (biochemical oxygen demand) in interceptors. And the stronger effluents required additional treatment in the city sewage plant, already faced with overloading due to population growth.

Develop Strategy

A four-pronged attack was launched to recover byproduct losses. Scheme was based on collecting and analyzing past data to obtain material balance of increased waste production. Idea was to:

1. Determine hourly and total waste production.



NEW INTERCEPTOR BASIN, with mechanically operated skimmer (background), provides additional 6,000-8,000-lb daily grease recovery.

2. Trace sources of wastes discharged into interceptor basin and processes they served.

3. Analyze hourly samples for solids (total, suspended, and volatile), ash, nitrogen, 5-day BOD, temperature, and pH.

4. Record the liveweight animal slaughter factors, along with data on recovery of blood, grease, and tankage, to interpret waste production and byproduct recovery per 1,000 lb. of kill.

The data pinpointed strong and weak discharge operations. Major sources of high grease and BOD, company learned, were hasher waters discharged by inedible rendering departments and sludge from bottom of interceptors. Solution was to segregate these stronger wastes and treat separately.

In the original system, grease and solids-containing hasher waters were gravity-fed to 20-mesh vibrating screens. Recovered solids were wet-rendered and pumped to green tankage, while screen's underflow went to 400,000-gal. interceptors containing primary and secondary settling basins. Also fed in were waters from kill, dressing, cutting, and cooling operations.

Detention times in basins were eventually cut from 30 to 15 min. Floating grease was manually skimmed from interceptors, sent to sump for bucket-elevator delivery to steam-blow tank, and then ejected to a grease-cook tank. Grease was pumped to storage tanks and solids passed over manure vibrating screen before loading into RR gondolas.

Also at interceptor, settled waters were pumped to city sewerage. Solids went over a vibrating screen, where they were recovered for delivery to green tankage. Screen's underflow waters, too, emptied into sewer.

Culprits Found

New data pointed to heavy loads from wet rendering operations, as well as from interceptor-sludge recovery.

Wash waters from hashers (employed to prepare inedible animal tissues, for rendering) pass through a 20-mesh vibrating screen before reaching interceptors. Screen underflow data revealed large amounts of grease and solids (tissue and manure) with grease content amounting to 2,850 ppm. Efficient treatment could be expected to recover 40,000 lb. of grease daily.

The other trouble factor—sludge recovery—was traced to an inefficient method of recovering bottom solids from interceptors on vibrating screens. Pumping carried fine solids through screens and resulted in high loads (BOD and suspended solids) in waste waters discharged to city system.

To fight byproduct loss and municipal-system overloading the firm studied a number of waste-handling systems. And it finally decided that on the factors of cost and improved byproduct recovery, its best solution was to modify methods of handling hasher wash waters and interceptor bottom sludge to recover more grease and green tankage. At the same time, the hydraulic and biological loads of the sewage would be slashed.

Steps to Success

Here are Rath's four modifications (refer to drawing):

1. Segregating hasherwaters. Formerly, grease recovery was difficult when these waters (1.0 mgd.) were fed, along with plant's other waste flow (5.75 mgd.), to the four 400,000-gal. interceptors. Also, on the way to interceptors, waters passed over five 4x7-ft. vibrating screens. And the high grease content caused screen "blinding" that required assignment of two men to wash the screens.

Simple change involved bypassing screens and segregating hasher waters into a separate 60,000-gal. primary interceptor. By providing a 70-min. detention time in interceptor, grease recovery increased 25%. Installation of a chain-flight type skimmer resulted in an additional 6,000-8,000-lb. daily grease recovery.

2. Recirculating settled waters. Practice was to use fresh water to wash interior of hashers. Data showed that settled waters in originally used secondary interceptor basins were of sufficient clarity for recirculation into hasher sprays. This done, the system's hydraulic load was reduced by 750,000 gal. a day.

3. Screening sludge. Segregating unscreened hasher waters in primary interceptor permitted use of vibrating screens to recover solids. Longer detention time improved settling and concentration of solids, resulted in lower screen capacity and absence of screen blinding, plus improved clarification. What's more, the quality of screen-covered solids was now suitable for wet-rendering into tankage.

4. Recirculating screen underflow. Quality of these waters, containing soluble and less-than-20-mesh solids was improved by mixing with raw effluent (fed to interceptors for additional settling). Grease recovery also increased an additional 14 lb. per ton of slaughter.

Decided progress! But Rath still eyes the possibility of further hiking efficiency of its water-treatment. Hence, it's now pilot-plant testing a tower-type filter (3x3x40-ft.) to further reduce BOD of the interceptor waters discharged into the city sewer system. The tower comprises ten evenly spaced plastic-type honeycomb filters (3x3x3-ft.). (FE Staff)

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Wouldn't you like to see your fruit juices take on a clear, glowing sparkle and have better sales appeal? You can do it with the help of PECTINOL natural enzymes. Many untreated fruit juices have a characteristic cloudy appearance that persists even after repeated filtering—a phenomenon usually caused by millions of tiny, suspended pulp particles that do not settle because of the protective colloidal action of pectin. PECTINOL enzymes hydrolyze such pectins, the protective-colloid action is destroyed, and the suspended particles settle and make filtration easy.

PECTINOL action on fruit pectins can be helpful in many ways. When mixed directly with crushed grapes or berries, PECTINOL promotes the breakdown of the fruit structure, facilitates pressing, increases the yield of juice, improves color extraction, and speeds filtration. In preparing juice concentrates, PECTINOL prevents premature gelation during evaporation—when the fruit pectins are hydrolyzed with PECTINOL, the juice evaporates uniformly without tending to gel as the water content is lowered. Burning on heating coils is also reduced.

PECTINOL enzymes have been used in preparing juices, extracts, concentrates, purees, jellies, and marmalades from apples, grapes, oranges, prunes, dates, apricots, pears, strawberries, cranberries, blackberries, cherries, grapefruit, lemons, limes, and many other fruits.

Write to Dept. SP-22 for samples and technical literature.

Chemicals for Industry

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Pepsi-Cola's Market Audit

Gives Quick 'n Easy Progress Check

New do-it-yourself yardstick enables bottlers to make their own in-depth study of competitive standing, strong and weak points, promising breakthrough . . . Plan's flexibility has broad potential for others

HOW TO find the strong and weak points in the marketing operation has long nagged top-executive management. Desired is a scientific yard-stick for checking efficiency as easily as it's done in the production (time and motion studies, engineering specs) and financial areas (conventional accounting).

Fast-moving Pepsi-Cola, whose sales and profits the past few years have bubbled along at a faster pace than the soft drink field as a whole, has now come up with what it feels is a big step in this direction. It's a sort of do-it-yourself audit that enables the individual franchise bottler to make his own overall evaluation of his marketing program.

True, many of the audit's features are slanted to the soft drink field. But the aims and methods behind the program can be adopted and modified by firms in other segments of the food industry.

At least, Pepsi's reasoning behind the need for such a program suggest its broad potential throughout the industry. As Sy Lusterman, Pepsi's knowing, soft-spoken market research head, puts it: "We're successful to the extent that our bottlers are. The better they know their territory, the faster they're able to put their finger on potential trouble spots, the more efficient they'll operate."

Substitute your own "wholesaler" or "distributor" for "bottler" and you get an idea how the audit can improve your own operation.

Program targets, Lusterman explains, is to give the bottler "a systematic study of his own market, a quick and easy means of spotting trends and measuring competition."

The need for a marketing audit, and the benefits it brings, are summed up thusly by Lusterman: "Effective marketing requires planning, and intelligent planning must be informed. These twin needs—for knowledge of market conditions and for systematic planning based on that knowledge—are receiving growing attention from all business segments.

"Pepsi-Cola's Franchise Marketing Audit (FMA) is the means by which bottlers will be able, for the first time, to study their marketing operations in depth, and to measure their competitive standing in many areas of merchandising. It makes possible the pinpointing of problems and of opportunities. And, no less important, it will now be possible to measure progress—to review periodically.

"FMA gives the bottler a scientific yardstick for measuring weaknesses and assessing needs, for uncovering trouble spots before they become critical, and spotlighting breakthroughs ready for further exploitation at the right time. Up to now, he had no guide to the selection of appropriate tools and programs."

A key point in FMA is that it is carried out by the bottler himself. His own men, once they're "schooled" by Pepsi on what to look for and how to find it, do the actual fact-gathering.

No Pressure, No Charge

FMA is voluntary and free. The individual bottler decides whether or not he wants the audit. And the raw data turned up on survey cards is converted to meaningful information on Pepsi's leased IBM equipment at no charge to the franchise holder.

Indirectly, FMA helps to make the bottlers more marketing oriented, too. And in the soft drink field, where an estimated 60% of the gross dollar goes for marketing functions, that kind of awareness is very important.

The new FMA mirrors the kind of smooth long-range planning Pepsi is going for more and more these days. Company officials often point out that during the Fifties,

THAYER C. TAYLOR
Associate Editor, "Food Engineering"

Pepsi grew at such a breathtaking clip (sales up 188% from '49 to '59) it didn't always have the time for some of the niceties of organizational planning.

But in the past year or so, with competition in the field heating up and future population trends likely to have an important effect on soft drink consumption, Pepsi has been overhauling its marketing arm (see FE April '59, p. 49).

Besides the new FMA, the parent company recently launched its own national audit of the retail trade. This one, to be done several times a year by an outside firm, will give management a running, graphic picture of regional trends in the soft drink field. And when FMA is picked up by enough bottlers, the two audits should give the company a pretty well detailed marketing map.

Beginning in the spring of '59, Pepsi put a lot of careful ground work into FMA's methods and questionnaire form. Big problem was to design survey forms and procedures flexible enough to fit the smallest and biggest bottlers, as well as those operating in different types of markets. And to prevent possibility that inexperienced route salesmen might feed back the wrong information, Pepsi had to construct a survey procedure that would be as errorproof as possible, as well as organize training sessions for route supervisors who would conduct the surveys.

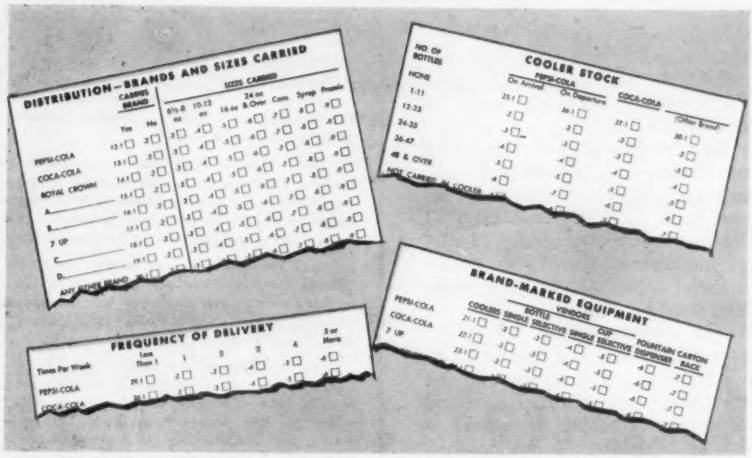
Among the factors considered in evolving the final survey form were: The amount of time per outlet needed to fill in the information called for, a convenient handling size, amount of data that will go on a single card without creating difficulties of understanding in the field or processing on IBM equipment.

Once a prototype inquiry form was worked up, Lusterman's department (last fall) picked eight bottlers for dry runs. These were selected on the basis of geographical area and type of market.

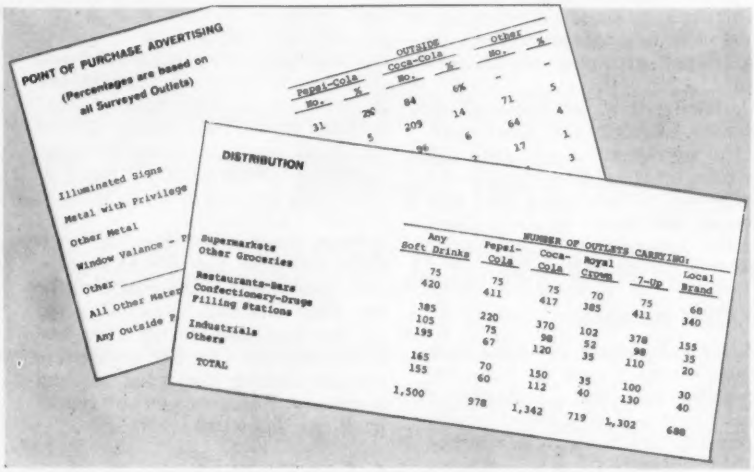
When the results of these field tests were in, and the bottlers' suggestions reviewed, changes were made in the questionnaire form. For example, distribution was played down, and merchandising got more emphasis.

How It's Done

FMA was cast into final shape in time for presentation at Pepsi's bottler convention this Feb. An elaborate manual distributed at



FMA INQUIRY FORM covers distribution, brand-marked equipment, cooler stock, delivery frequency, point-of-purchase advertising, number of cases on display, carton price, stock seen on arrival, and amount of soft drinks sold.


POINT OF PURCHASE ADVERTISING
(Percentages are based on all Surveyed Outlets)
DISTRIBUTION
NUMBER OF OUTLETS CARRYING:

RAW DATA is processed through IBM computers, then assembled in statistical reports such as these. Final tabulation can cover as many as 7 different brands, including Pepsi and leading competitors like Coca-Cola, Royal Crown. Bottler decides how many brands, what subject areas, he wants the audit to cover.

HUDDLE: Pres. LaPides and Gen. Mgr. Fletcher pore over report. They look for patterns that show how their firm stacks up against competition, rate of progress being made, and whether company is abreast of market changes.

the meeting explains the steps involved in conducting an FMA, how to plan the survey, and how to profit from it.

Once a bottler decides he wants to do his own marketing audit, he contacts the Pepsi district manager who is his liaison with the parent company. In Pepsi's national set-up, there are four regional or division offices, each of which is staffed by a group of district managers. Each DM works with several bottlers, helping them in any way he can.

At a management planning meeting between the bottler and the DM, scope and timing of the survey are blocked out. Discussed here are such points as: Number and type of routes to be included for a complete picture (Pepsi suggests 400 accounts or 20% of the area total, whichever is larger), day of the week to conduct the poll, sub-areas to be considered (such as white vs. Negro, city vs. country), number of brands to include, whether to concentrate on just Pepsi accounts or all accounts.

Following this, the regional office asks Lusterman's department for the survey forms and training kit. At a briefing session held for the route supervisors, the DM stresses the need to avoid bias and the importance of getting an objective picture.

No Cost Increase

After the bottler completes his survey—from 1 week to 1 month, depending upon the complexity of data sought—the marked questionnaires are forwarded to the market research dept. where they're converted to punch cards and run through the company's IBM equipment. Since part of the equipment's running time is always devoted to market research use, processing the FMA cards represents no additional expense to Pepsi.

Lusterman aims for a 3-week schedule from the time the inquiry forms are received to the time the finished statistical tables (summarizing the actual figures and percentages) get back to the bottler. The final report is routed through the district manager, who after analyzing the key findings, presents the report to the bottler.

The bottler then huddles with his managers and route supervisors on the survey's significant points, what it shows in regard to his operation, what corrective action needs to be taken.

Why Pepsi's Move Is Important To You

THERE'S a new box appearing on more and more organization form charts—the trade relations director. That's because of greater determination on the part of food makers to cement closer, more effective relations with those who distribute and sell the goods. The reason for it is simple—the more satisfied your trade customer is, the more he'll want to do business with you.

When General Foods pioneered with its new network of sales-service and distribution centers, Chairman C. G. Mortimer put it thusly (see FE Jan. '59, p. 43): "Closer cooperation between all industry segments is the key to better service. We are striving for better understanding of our customers' problems and the improvement of service, in order to make it more attractive for them to do business with us."

And Pet Milk's W. Ray Henry, one of the first men in the industry to wear the title "Trade Relations Director," wrote in FE (Dec. '59, p. 42): "Swift-moving changes in our industry buttress the conviction that future progress depends upon a collaborative approach to problems affecting retailers, wholesalers, and manufacturers alike. Development of a mutual-help program will contribute greatly to the attainment of that objective."

Today's supermarket industry is as much the creation of the food-beverage makers as it is of the retailers themselves. By their successful brand advertising, new product development, and mass merchandising techniques, the manufacturers built the foundations on which the supermarket rests today. These marketing aids will still be important in the future, but you will also see the manufacturer's trade relations being more influenced by what he can do to help solve the retailer's and wholesaler's problems. Service will be the keyword—and the company offering the most satisfactory service will be the one whose products win hard-to-get shelf space.

Lusterman points out that the audit's value will build on itself in years to come as bottlers use it repeatedly. He suggests that bottlers do an FMA on an annual basis, at least, to get a running picture of what's happening.

How do Pepsi's bottlers react to FMA?

Pres. Jerome LaPides, of Pepsi-Cola Bottling Co. of Annapolis, Md., one of the 8 firms picked for dry runs last fall, says, "It gives us the best picture we ever had of our market. Our big problem is always finding the good or bad segments. When we got our report back, we knew where to look."

Spadework Did It

Before the audit was begun, his sales manager, Gordon Driver, spent considerable time with the three route supervisors who would do the fact-gathering while making the rounds with the driver-salesmen.

He emphasized the need for undistorted data. And he went over every piece of information asked for in the survey card to make sure that each of the three men had the same idea as to what should be entered on the cards.

Then, as the supervisors turned in their cards each day, he checked the markings for fictitious or suspect figures. For example, if a card indicated an outdoor Pepsi sign for a supermarket that he knew was of all-brick construction, he asked the supervisor "how come?"

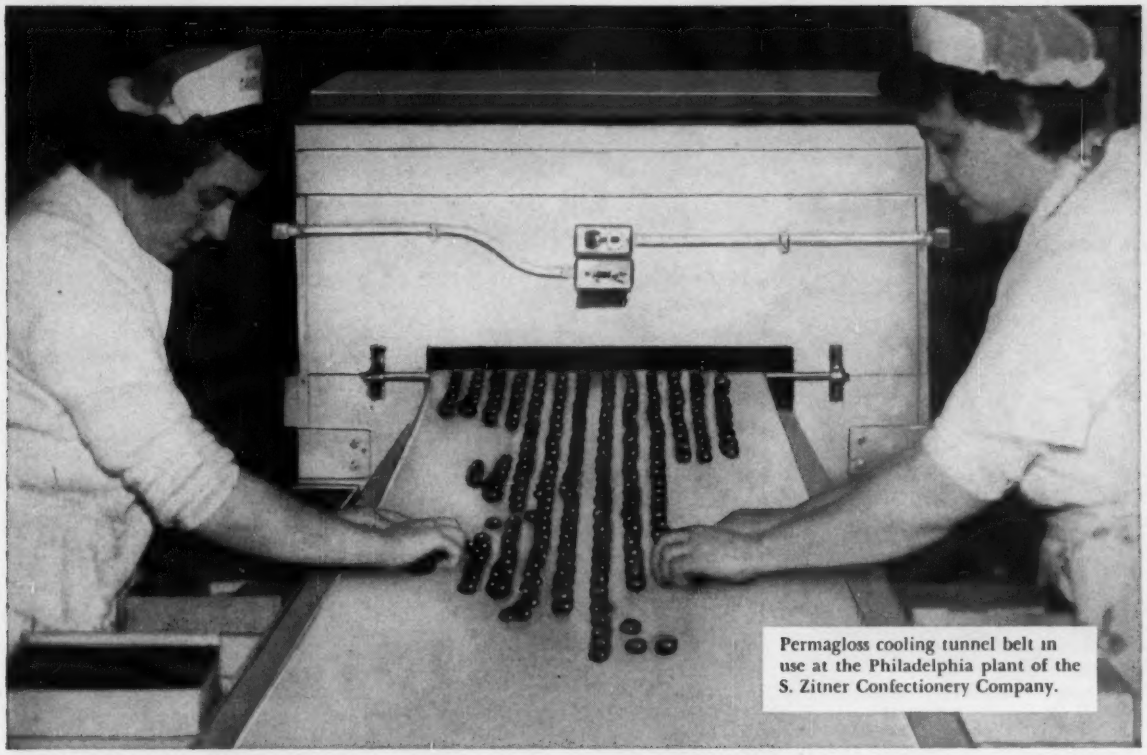
After LaPides received his tabulated report, and market patterns revealed themselves, corrective measures were set in motion. For example, he soon learned where his company was weak on point-of-purchasing advertising. This is a critical factor for bottlers, he stresses, because an estimated 70% of soft drink sales are made on impulse.

The company also learned where to redirect selling efforts. "Our cooler placements compared unfavorably with the competition," the president noted. "So we began an incentive contest with prizes for the man who sold the most coolers."

"We also spotted where a competitor was making the deepest inroads into our business," LaPides explained further. "One of our men showed up pretty weak against a new Coca-Cola franchise from Baltimore. So we checked the other areas served by this franchise and found the same pattern. We knew then this was a tough cookie to handle, so we put our route supervisor to work on the accounts.

"The results also gave us a picture of our competitors' advertising. We learned where we had to step up, and reduce, our ads for greater effectiveness."

The market research director sees unlimited possibilities for do-it-yourself marketing audits in the future. Once bottlers have become familiar with the present FMA, Lusterman visualizes other audits being used to tackle additional knotty problems. (End)



Permagloss cooling tunnel belt in use at the Philadelphia plant of the S. Zitner Confectionery Company.

TWO YEARS OLD—AND THIS PERMAGLOSS BELT IS STILL AS GOOD AS NEW!

In May, 1958 the S. Zitner Company installed Permagloss belting in its cooling tunnel.

In May, 1959, to allow lengthening of the tunnel, a 30-foot addition was spliced into the belt.

Today the original belt, the splice and the new length are all functioning perfectly.

Competitive belts used in the same installation gave an average of six months service.

Mr. Leon Sherman, Manager of the Zitner Company, states: "I feel that if Permagloss Belting is installed properly and not abused, it will last almost indefinitely. Our belt is in constant use. Yet, it shows no physical deterioration, no chemical damage. In my opinion, Permagloss is the answer to one of the confectionery industry's age-old problems."

Mr. Sherman also points out that Zitner is proud of the perfect, high-gloss candy bottoms produced by the mirror-smooth Permagloss surface.

Permagloss can replace almost any other belting material on a food line conveyor and give better service. Yet, it actually *costs less* than most! Write today for a sample of Permagloss, plus full information and the address of your nearest authorized Permagloss Technical Representative.

WHY PERMAGLOSS BELTING WILL OUTPERFORM ANY OTHER

Made of DuPont Mylar® and Firestone Vinyl.

Amazingly tough and durable.

Dimensionally stable.

Impervious and inert to all food substances.

Mirror-Smooth top surface.

Embossed, nonslip bottom surface.

Withstands temperatures from 0° F. to 275° F.

Does not crack or craze.

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EXECUTIVE OFFICES: Charlotte, N. C.

CIRCLE 87 ON READER SERVICE CARD

Problem:

To speed up pepper grinding without losing volatile oils

Solution:

SPROUT-WALDRON
ROLLER MILLS

To grind pepper to −40 mesh at production rates from 2-3000 pounds per hour without generating excessive heat or causing unnecessary loss of volatile oils, Durkee Famous Foods, Bethlehem, Penna., installed a Sprout-Waldron pepper grinding system.

Heart of the system is the one-point control double roller mill. Design of this unit permits operator to set and align rolls with complete accuracy in a matter of seconds. The higher the production requirements, the more important is this one-point control feature.

For full details on the Durkee system, ask for Pointers, Vol. 2 No. 5. For specifications on the roller mill request Bulletin 153-A.

CW/109

SPROUT-WALDRON
Muncy, Pennsylvania

Size Reduction • Size Classification • Mixing
Bulk Materials Handling • Pelleting

Are Price Cuts Worth It?

From files of *National Consumer Panel of Market Research Corp. of America* . . . Material is factually correct. Identities of products and companies have been masked to insure anonymity—The Editors*

MARKETING CASE HISTORY OF MONTH

Management's problem

ALONG WITH other advertised brands in our product class, we have been experiencing a steady softening in our brand share. This is due largely to increased competition from private label and "price" brands.

To reverse the trend, we recently launched an extensive promotion that featured, in effect, a substantial price reduction. Other major advertised brands followed suit.

The result was a step-up in buying activity that increased both our volume and brand share for the year over the previous 12-mos. period. We feel that these promotional efforts have succeeded in bringing into the market many new users of the product and that we now have an opportunity to broaden our franchise by launching similar campaigns in the future.

Before undertaking such programs, however, we want to make sure of our facts. Specifically:

1) Did the other major advertised brands experience the increase in volume that we did?

2) How successful was the deal offer in attracting new families to the market?

WHAT WOULD YOU DO?

Management's decision

We consulted the purchase records of families in the National Consumer Panel for the year that included the heavy deal activity and for the previous year.

We found that other major advertised brands also increased their volume and brand share while the progress of the private label and price competition was halted—at least temporarily.

We also discovered, however, that the number of families buying the product during the second year was no greater than the total purchasers of the year before. The increased volume came from more frequent buying and heavier purchases per transaction by existing customers.

Furthermore, these customers were no more prone to remain loyal to a specific brand than formerly, but, instead, divided their purchases among advertised brands in the same proportion as before.

Result of action

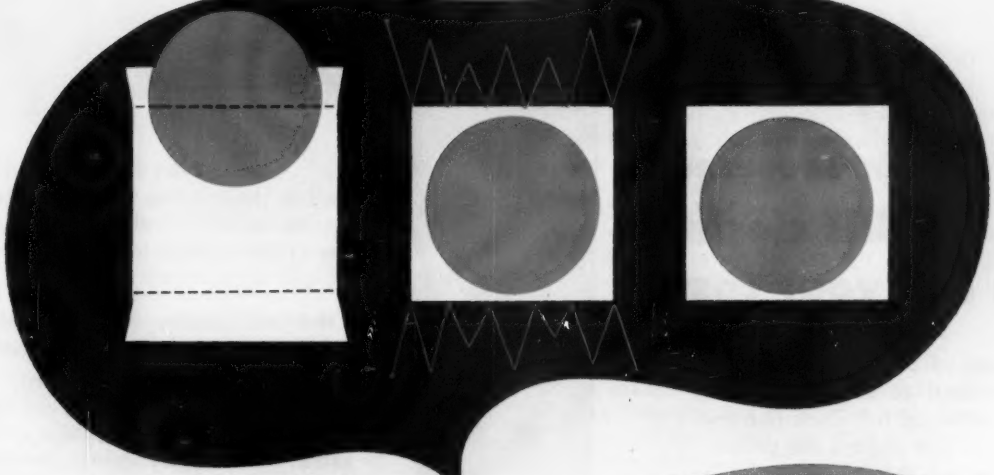
We concluded, therefore, that the deal offer was only effective as a stopgap measure and was not necessarily the way to broaden our franchise or stimulate brand loyalty.

These findings led to a revision of our marketing thinking. We did not discount the value of price promotions in combatting any future resumption of a downward sales trend. But we realized that other methods would have to be found to attract new users to the market.

*For more information, write to FOOD ENGINEERING, 56th & Chestnut Sts., Philadelphia 39, Pa.

PACK IT

WITH RADIO WAVES

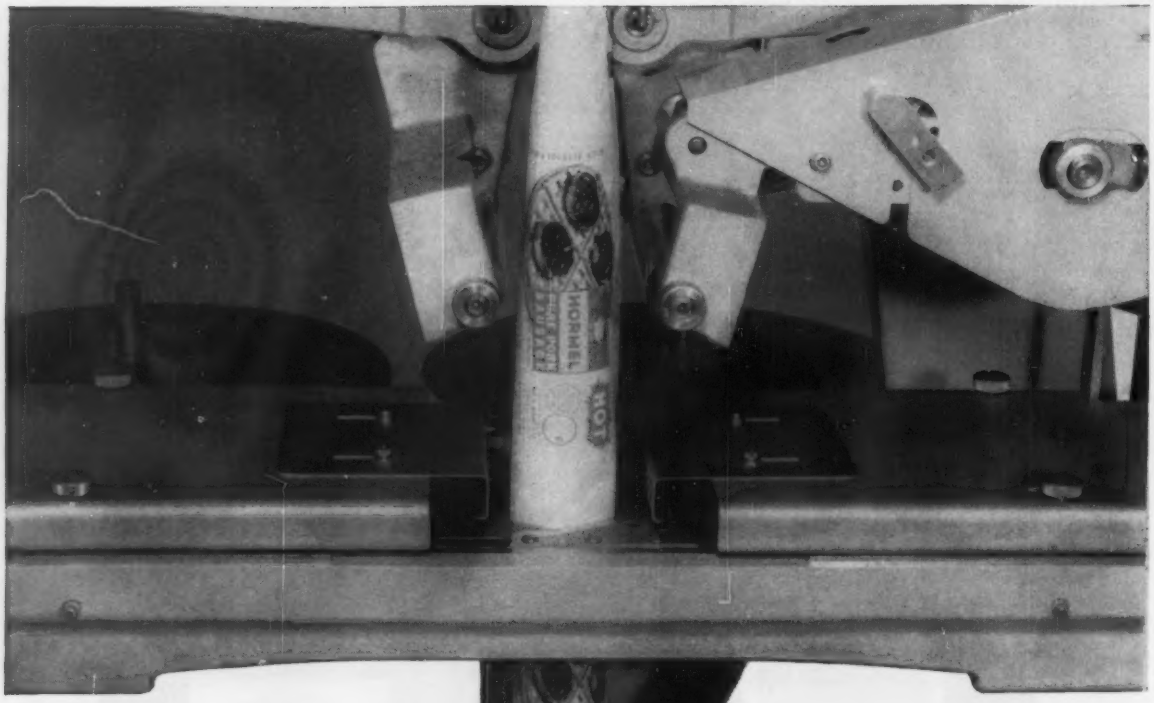


CCA's new Di-Electric Sealer positively seals cartons by the heating action of radio waves on cold glue.... High-frequency waves eliminate de-waxing necessary with conventional sealing methods—and unwieldy overwraps. Provides fast, smooth production, plus protection and merchandising advantages. To **pack it—move it—sell it** is the business of CCA packaging. For details...

CCA

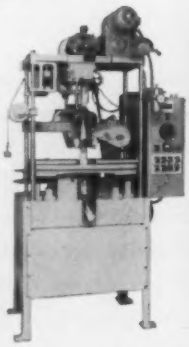
CONTAINER CORPORATION OF AMERICA

Chicago 3...and all key marketing areas. **Folding Cartons, Shipping Containers, Sefton Fibre Cans, Molded Plastic Products**



If it can be squeezed, this closing can clip your costs

Total cost of materials about $4 or $5 per thousand packages! Uses only 75 square inches of roll stock film and 1½ inches of coil wire for a one pound package . . . with NO WASTE.



Occupying floor space only 3 ft. x 4 ft., the chub machine takes low-cost roll film and heat-seals it into a strong continuous tube. Tube fills automatically as it passes over end of mandril carrying the product.

Such is the amazing economy of the new improved KP Chub Machine . . . the most efficient packaging unit ever offered for any semi-viscous product.

Electronic registry control "reads" the printed film to pinch off and close packages at proper point, simultaneously applying two clips made from low-cost coil wire. Completely automatic and foolproof, with dependability proven over years of service and millions of uniform, skin-tight, clean, saleable packages.

Uses almost any film, printed or clear. Accurately meters 4 to 32 oz. packages, with capacity 2400 closings per hour. If you are packaging pork sausage, liver sausage, sandwich spread, cheeses, cookie or pie dough, cake frosting or similar products, a KP chub machine plan can improve product appearance and cut packaging costs. Let our representatives investigate this with you. Write today.

Visit Booth 88-90 AMI Show, Sept. 16-20. Also ask about KP linkers and strippers.

KP

THE KARTRIDG PAK CO.

Dept. E, 800 W. Central Road, Mount Prospect, Ill., Telephone CLearbrook 3-2800

Aluminum Cans: No Runaway Yet

You can discount those heady claims that 90% (or even "most") of next season's frozen orange juice concentrate will go to market wearing all-aluminum. Most industry sources say 40% to 50% will be tops.

For one thing, suppliers doubt that enough of the light metal could be delivered for anything like 90% of the pack. Last season's output required 1,572,000,000 6-oz. cans, 171,000,000 12-oz. tins.

Also, tinplate supplies are heavy. One canmaker estimates inventories amount to 25% of the '60-'61 pack. And a major freezer says half of his needs are already tied up in tinplate.

Finally, aside from Minute Maid, packers aren't fully convinced that all the bugs connected with aluminum have been eliminated. While some are waiting for the results of experiments with a new composite can—aluminum ends seamed to a body comprising a laminate of paper, aluminum foil, and polyethylene—with built-in pull-tab opener.

Here's the rundown on prices: As of Dec. 1, all-aluminum can (.008-gage) $2/M less than 70# tinplate can; aluminum body with one aluminum end $1.26/M cheaper; and aluminum body with two tinplate ends $1.01/M lower.

Mortimer On Payola

GF Chrmn. Charles Mortimer, who more than once has proved that nice guys finish first, recently spelled out GF's anti-togetherness concerning hanky-panky between buying agents and suppliers. Asked at the annual meeting how GF makes sure it doesn't have a "Chrysler situation," Mortimer replied:

"All employees who are directors or officers, as well as other selected executives, have signed statements that they have held no material interest in any transaction with suppliers of goods or services. It is (our) expressed policy that neither employees nor officers . . . may receive gratuities or any . . . remuneration arising out of purchases by the company."

Beatrice Leaps The Pacific

While most talk of international marketing focuses on Europe, a few forward-looking firms are setting their sights on Asia. Gerber Products recently made franchise arrangements for baby foods in Japan, and now Beatrice has selected Malaya as its initial foreign investment.

Pres. William Karnes says the federation, which imports most of its milk products, has fastest rising living standard in Southeast Asia. Beatrice, in a joint venture with a local firm, will build a sweetened condensed milk plant in Malaya, and may eventually expand to other areas where dairy products are in short supply.

US Food Net Tops Canadian Level

How do food firms in this country compare, profitwise, with Canadian outfits? Based on figures provided for '57, US food-makers had a higher net per sales dollar in the dairy, grain mill, and bakery fields, but trailed in meat and canning sectors.

Here are profit ratios reported for Canadian firms by the Canadian Bank of Commerce with US figures in parentheses: Meat packing, 1.2% (0.5%); dairy, 2.4% (2.6%); canning, 3.2% (2.2%); grain mill, 1.9% (3.4%); and baking, 2.7% (3.3%).

Burry Sells The Stockholder

Most shareholders are said to be pretty poor salesmen for the products their companies make. In fact, a recent poll found that 51% were unable to name what the company whose stock they owned produced, and another 6% named the wrong product.

One food firm out to correct such apathy is Burry Biscuit. Last two pages of its semi-annual report were devoted to "notes to consolidated statement of facts about two best-sellers" (firm's lemon squash and chocolate chip cookies). Point was driven home with such financially-oriented phrases as: "inventories . . . hard to keep up with; preferred stock . . . in every home; dividends . . . of enjoyment in every bite."

Barometer: New Highs In Sight

New record for food and beverage outlays by consumers is in the making. Just-out data covering the 2nd quarter of '60 showed consumer expenditures for eating and drinking (seasonally adjusted, annual rates) peaking at $81.4 billion.

This topped the first quarter by 2.3%, the comparable '59 level by 4%. The quarter-to-quarter gain this year was much stronger than last year, when the 2nd 3-mos. span was just a sliver (0.6%) over the preceding period.

BRIEFS

Can makers stepping up merchandising services to retain stake in processed foods field. One of the biggest firms plans to bankroll a trade association of convenience food firms, use it as nucleus for strong promotion drives.

Thirty-three million lunch boxes are packed each day, Dow Chemical estimates.

Industrial cafeterias bought $676.2 million of food and beverages last year, according to survey by "Inplant Food Management."

Juveniles will be prime target in Wagner Baking's promotion of its snack-size pies.

Fewer diapers, more rings: For the first 6 mos. this year, births dipped 2% below '59 level, but marriages increased 2%, Public Health Service reports.

Firms wanting in on annual Cheese Festival, running the entire month of Oct., should contact American Dairy Assn., Chicago, for special leaflets that can be used in promotions.

Despite falling farm income, farmers got more attention from food firms for first half of '60. Data from Farm Publication Reports show that ad spending by top 10 food firm-users in that media was up 5% over year-ago levels.

"Tomorrow's consumers"—the youth market—will be targeted in upcoming Maine Sardine Council promotions.

How Whey Solids Can Lift Your Profit Two Ways

Now used in a rapidly increasing number of foods, they cut costs and boost quality. Both pay off . . . Applications cited, whey-processing detailed

BIG NEWS about whey solids: With food uses up 35% in five years, this versatile product now appears headed for a definite place among the major ingredients. So says H. Lamb, marketing manager of Kraft Foods Industrial Products, Chicago.

Some 75 million lb. will be used this year by bakers, dry-mix manufacturers, frozen-food processors, ice cream producers, and confectioners. This will account for more than a third of total '60 production and, by '65, the market for edible whey should reach 150 million lb.

According to Lamb, whey solids have enabled manufacturing-cost savings of 2-4c. per pound of powder used. Equally important, they promote product quality in the critical areas of flavor, color, consistency, and shelf-life.

Kraft produces two types of whey solids at its new Stockton, Ill., plant, which features several process innovations. One product is condensed and spray dried. The other, a baker's special, has added sodium caseinate and calcium salts that make it particularly effective in raised doughs. By improving machineability of such doughs, for example, it increases product tenderness.

For sharp quality control, Kraft operates a pool of whey-condensing and processing plants. Centrally located in each pool is a drying plant. Presently there are three such pools, and possibly eight more are planned.

Looking to the future, Kraft sees wide use of whey solids in sausage products and cereal concentrates. Fractionation of whey provides lactalbumin and lactoglobulin, valuable in fortifying high-protein cereals.

Here is how edible whey now solves production problems and ups product quality in processing of:

. . . **Cookies and Crackers**—Adds natural "shortness" to cookies without use of extra shortening. Possibly, this results from interaction of whey lactose and protein, but in any case the increased tenderness definitely improves eating quality.

Surprisingly, the lactose-protein combination doesn't mask, but enhances the effect of added flavorings. And it develops a uniform, golden-brown crust color reportedly superior to that obtained by sweeteners. Usage: 2-6% of flour weight.

. . . **Pie Crust**—Minimizes water absorption, thus aids in preventing tough, doughy, or soggy crusts. Here, too, whey solids improve tenderness (less fat required), and develop uniform, attractive crust color. Usage: 2-6% of flour weight.

. . . . **Yeast-Raised Goods**—Improves machineability of doughs that must be formulated and processed for efficient handling on mechanized lines. Whey proteins (casein and lactalbumin) give doughs optimum absorption and elasticity, also its mineral balance aids in control of fermentation.

Improved elasticity permits thinner rolling of dough for easier shaping into loaves or rolls. Baking time is cut some 2½-3 min., and finished goods have finer grain structure that retains interior softness. Usage: 2-6% of flour weight.

. . . **Cakes**—Enhances fine grain and texture, while rendering cakes moist, fresh-tasting, tender, and flavorful. Improved flavor is particularly noticeable in chocolate, cocoa, and spice cakes. In white and yellow types, whey also promotes attractive crust color. Usage: 7-15% of flour weight.

. . . **Pancake, Waffle Mixes**—Tenderizes prepared products and imparts appetizing color. Usage: 10-15% (dry basis).

. . . **Cake Mixes** — Improves flavor and tenderness. Usage: 4-10% (dry basis).

. . . **Starch Puddings** — Gives smooth consistency and delicate gel structure, also enhances flavor, general appearance. Usage: 8-14% (dry basis).

How Whey Solids Serve Processors

► **Cut formulation costs, simplify processing, and prolong shelf-life.**

► **Act as browning agent, humectant, tenderizer, and flavor carrier.**

► **Serve as nutritionally sound extender because of low sweetness.**

► **Stabilize certain items, improve consistency and gel structure of others.**

► **Enhance whipping properties.**

. . . **Dry Soups, Dips, Seasonings, Gravies** — Serves as flavor extender, can cut amount of spice oils required, and prolongs shelf-life. Usage: 3-30% (dry basis).

. . . **Breading, Batter Mixes**— Reduces fat absorption, curbs lumping (on reconstituting mix), and offers uniform golden-brown color. Usage: 2-15% (dry basis).

. . . **Instant Potatoes** — Aids whipping so reconstituted product is moist, smooth, and fluffy. Also enhances potato flavor, prevents crusting on standing or reheating. Usage: 2-7% (dry basis).

. . . **Confections**—Checks clotting or coagulation that would otherwise result from acidity or heating, provides some emulsification, produces up to 15 hr. of foam stability when liquid whey and sugar are whipped, and retains moisture to extend shelf-life. Usage: 8-14%.

. . . **Frozen-Food Sauces**—Helps bind water so sauces and gravies withstand repeated temperature fluctuation without curdling or weeping. Also imparts translucency, eliminates chalkiness. Usage: 1-20%.

. . . **Batters for Fried Frozens**— Cuts amount of required flavoring as well as fat absorption, retains product freshness and juiciness, produces attractive color, and prolongs frozen shelf-life up to 50%.

. . . **Heat-Processed Foods**—Improves control of consistency, enhances flavor of canned sauces, soups, gravies, and cheese sauces.

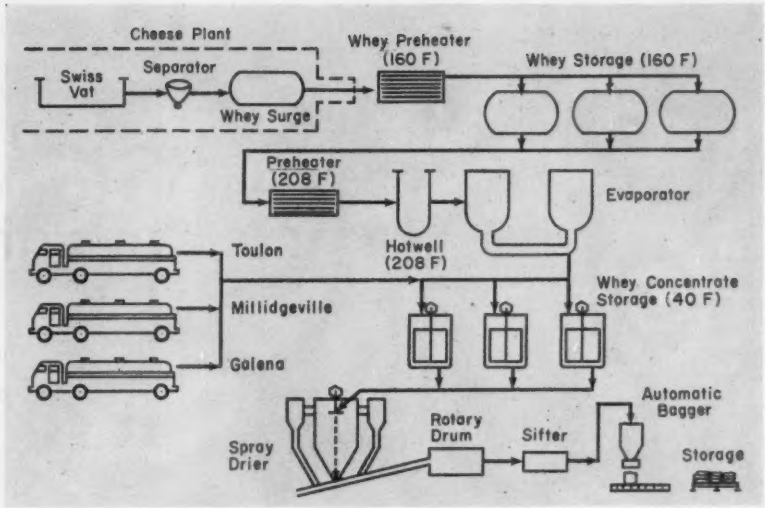
. . . **Ice Cream**—Replaces up to 25% of serum solids and improves flavor, especially of fresh peach and chocolate ice creams. Also used in sherbets (replaces milk solids on 100% basis), novelties, and ice milk.

Re Processing

Whey to be dried at Stockton is either concentrated at remote cheese plants for tanker haul to the drying facility, or piped underground from an adjacent cheese plant. In any case, some 0.5% of butterfat is first removed because it would adversely affect subsequent drying.

In the 4,000-lb./hr. operation, fluid whey is preheated to 160F. and collected in five holding tanks (total capacity, 350,000 lb.). It is then heated to 208F. and sent to a double-effect evaporator.

Product enters the 180-F. first effect with 6% solids, goes to the 125-130F. second effect at 18%, and is discharged at about 50% solids to six concentrate tanks.



FLOWSHEET details overall whey operations at Kraft's Stockton, Ill., plant. Fluid whey is condensed from 6 to 50% solids. After crystallization of lactose, product is stabilized by special processing prior to final drying.

Latter hold some 200,000 lb. of concentrate, and were specially designed by Kraft for the critical crystallization of lactose. Also introduced at this point are tank-trucked concentrates.

Crystallization of lactose and its subsequent conversion from the anhydrous to hydrate form are essential for stabilizing the final product. This prevents caking after powder is bagged.

Lactose is crystallized over an 8-hr. period in the water-jacketed (40F.) concentrate tanks which have vertical agitators.

Resulting slurry is then pumped to a Kraft-built 59-ft.-high spray dryer designed to operate efficiently within a narrow-capacity range. Over- or under-design, engineers figured, would be costly.

A non-clogging, basket-type centrifugal wheel (15,000 rpm.) atomizes concentrate particles inside spray the dryer. Latter is fed with steam-heated (350F.) air. Product (12% moisture) discharges from dryer and onto a rapidly moving inclined belt feeding a rotary drum dryer.

Leaving spray dryer, powder's lactose crystals are still in the undesirable anhydrous form. In the short time on the belt, they pick up moisture and are converted to a stabilized hydrate form. Excess moisture is driven off as solids are further dried in 300-F. rotary dryer.

Significant is another step in production of quality-controlled edible whey solids. It's the use of a high-velocity, 24-in.-dia. fan driven by 15-hp. motor for impacting the agglomerates as they are carried 50 ft. to a 3,000-lb.-capacity collector. Because Kraft uses no-color-added whey, this operation replaces the pulverizing conventionally required to "wash out" color.

Solids then pass over a 20-mesh screen (cyclic and elliptical motion), are collected in a 1,500-lb. hopper above a Bemis bag filler. Double-spouted screenings (for coarse and fine particles) are bag collected for animal feed use. Constant flow of solids from hopper to gross weigher is assured by an automatic start-stop chain-driven starwheel valve.

Bagged product (100-lb.) is conveyed to bag-flap sewing machine, from which it drops onto a short vibrating belt that packs solids for better stacking onto pallets.

CIP, Too

At end of a day's operation (two-shift), operator at whey plant phones his counterpart at cheese factory to get ready for cleaning-in-place of the dual pipeline. Both install elbows at ends of pipelines. Then, in sequence, rinse water, cleaning solution, water, and sanitizing agent (chorine solution) are recirculated through the system. Next morning, lines are recirculated with rinse water before use.

Similarly CIP'd are process units, tanks, and pipelines up to (but not including) spray dryer. (End)

It's true that H & D has a reputation for solving thorny packaging problems with imaginative box design. But our real forte is *volume production of regular slotted corrugated boxes*—the kind you probably use to ship your product. In fact, H & D's annual output includes about 225,000,000 of these economical containers. Can you make use of this *specialty* for *volume?*

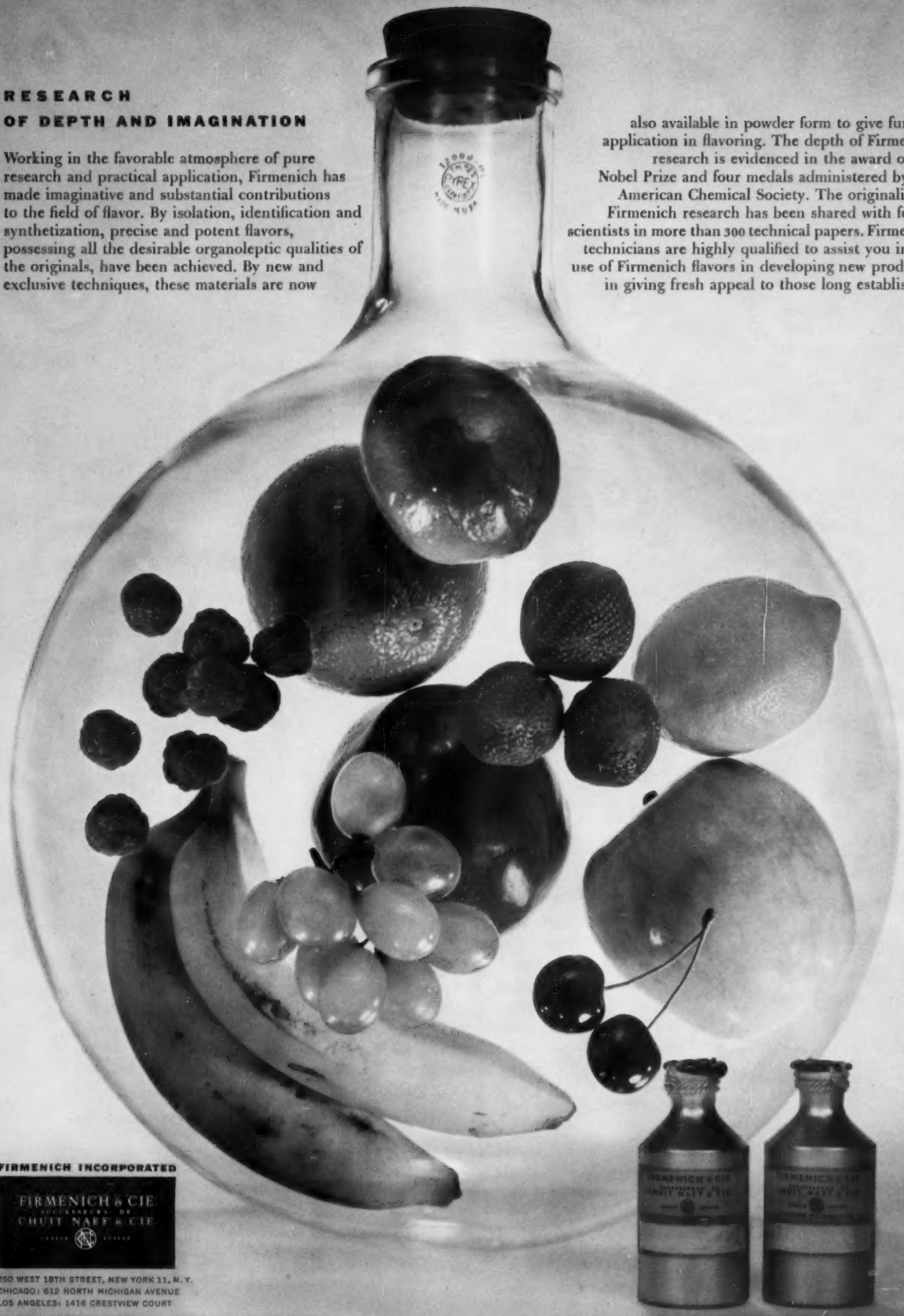
Hinde & Dauch Division

West Virginia Pulp and Paper

HINDE & DAUCH DIVISION, WEST VIRGINIA PULP AND PAPER, SANDUSKY, OHIO • 17 PLANTS • 42 SALES OFFICES

RESEARCH
OF DEPTH AND IMAGINATION

Working in the favorable atmosphere of pure research and practical application, Firmenich has made imaginative and substantial contributions to the field of flavor. By isolation, identification and synthetization, precise and potent flavors, possessing all the desirable organoleptic qualities of the originals, have been achieved. By new and exclusive techniques, these materials are now also available in powder form to give further application in flavoring. The depth of Firmenich research is evidenced in the award of the Nobel Prize and four medals administered by the American Chemical Society. The originality of Firmenich research has been shared with fellow scientists in more than 300 technical papers. Firmenich technicians are highly qualified to assist you in the use of Firmenich flavors in developing new products, in giving fresh appeal to those long established.



LOEBEL

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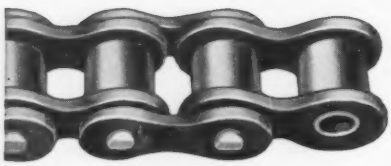
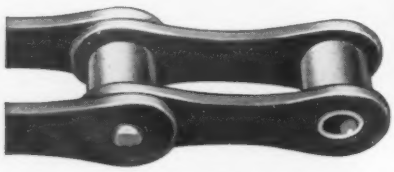


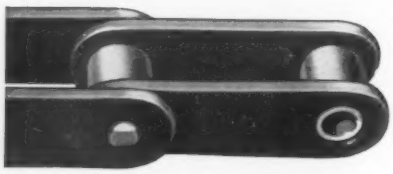
SINGLE STRAND

DOUBLE STRAND

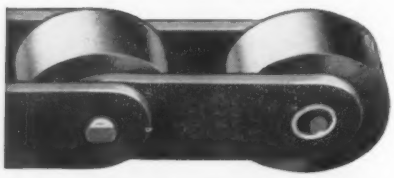
SINGLE STRAND, HEAVY SERIES



DOUBLE PITCH TRANSMISSION

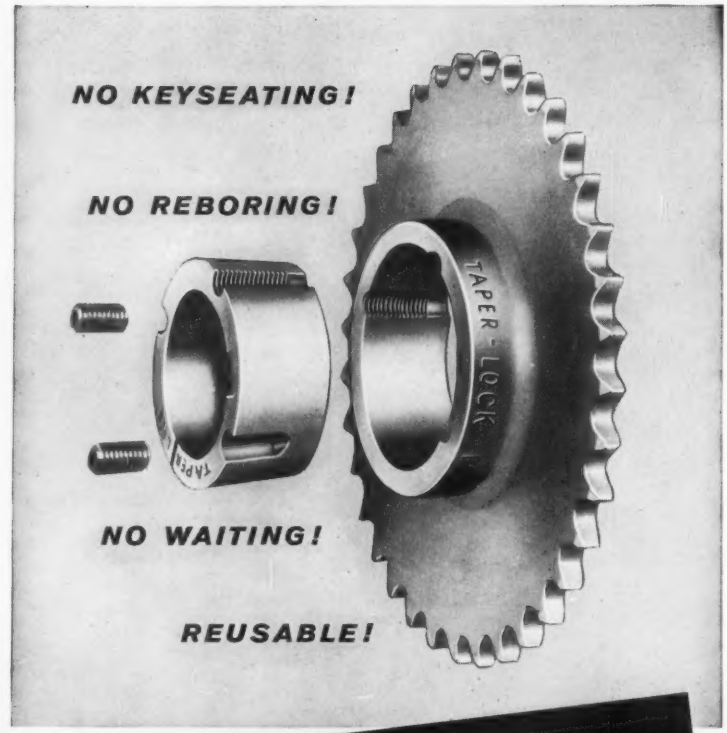


DOUBLE PITCH CONVEYOR



DOUBLE PITCH CONVEYOR, LARGE ROLLERS

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look under "Dodge Transmissioneer" in the *white* pages of your telephone directory, or in the yellow pages under "Power Transmission Machinery."



TAPER-LOCK SPROCKETS DODGE ROLLER CHAIN

DODGE Quality Roller Chain, teamed with Dodge Taper-Lock Sprockets, results in chain drives and chain conveyors that have the precision, efficiency and stamina necessary for the real economy of *long life*.

Moreover, Taper-Lock's reusable bushing makes a difference in overall cost. The ease of Taper-Lock mounting, the elimination of reboring, keyseating, and wasted time, add to the saving. Precision machining and true articulation lengthen the life of *both* sprocket and chain.

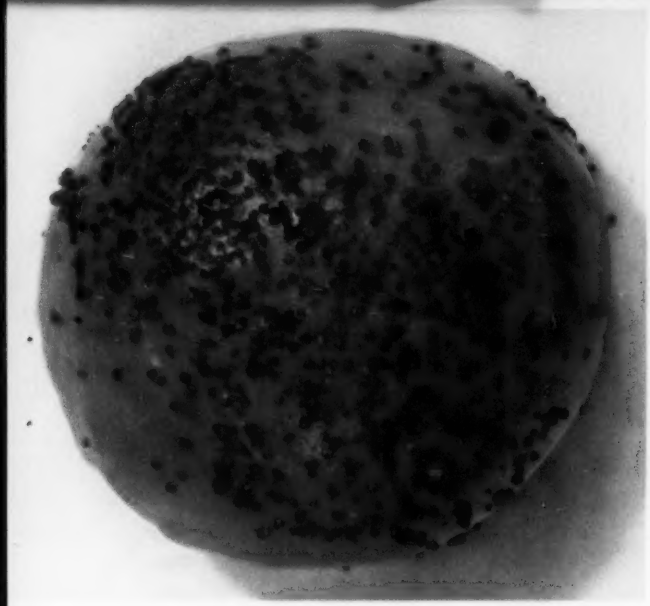
The Dodge line of chain, including standard attachments, is extensive. It meets a high percentage of all chain requirements.

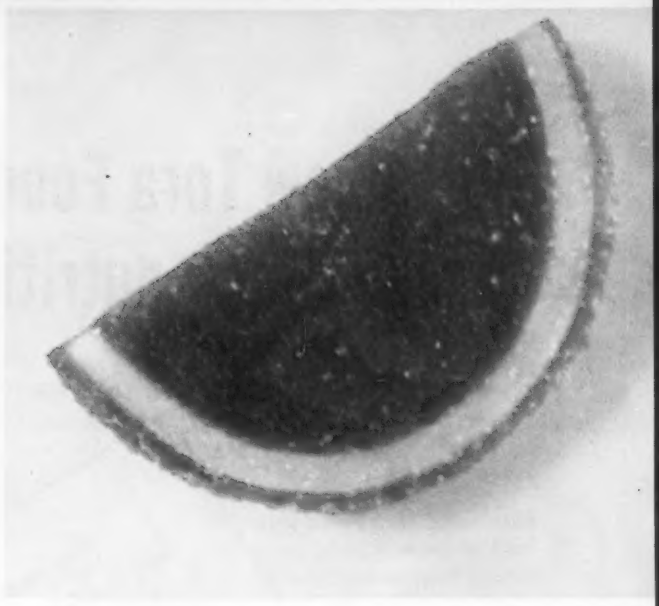
In the Double Pitch series (both Transmission and Conveyor) the sizes which require special spacing for perfect tooth action are offered from stock in special double pitch design — to double the life of the chain and the sprocket!

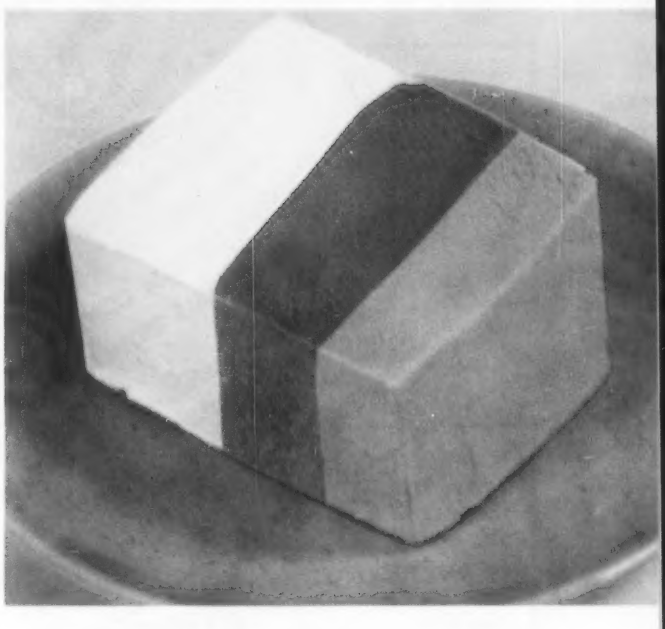
Ask your local Dodge Distributor. Or write us for bulletin.

DODGE MANUFACTURING CORPORATION, 2800 Union St., Mishawaka, Ind.

DODGE
of Mishawaka, Ind.







Flavorful, quality, eye-appealing foods...

naturally superior...when made with...

sugars, starches and syrups from

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CORN PRODUCTS

COMPANY

WRITE OR PHONE *Corn Products for expert technical assistance... helpful data on these fine products for the Food Industry:*

CERELOSE® dextrose sugar · REX® and GLOBE® corn syrups · BUFFALO® · HUDSON RIVER® and SNOWFLAKE® starches.

CORN PRODUCTS COMPANY INDUSTRIAL DIVISION · 10 East 56 Street, New York 22, N. Y.

Here's how Tora Food® can give you a new sales-building nutrition story at low cost

If you need a powerful new story to spark the sales of your cereal, Tora Food (Red St… brand name for Torula Yeast U.S.P.) is your … And you can actually *save* money. Here'…

How will Tora Food impr… tent of cereal? Here are s… factors housewives know … chart shows you how Re… these factors in a typi…

PER 100 GF…	
Protein..	
Vitamin	
Vitami	
Niac	

Vitamin B_1	
Vitamin B_2	
Niacin	
Vitamin B_6	
Para-amino benzoic Acid	20.…
Pantothenic Acid	150.0 milli…
Folic Acid	95.3 milligram…
Choline	4.8 grams worth
Inositol	5.4 grams worth
High quality Protein	1.5 lbs.

Here is a nutritional "barrage" that can't help but impress the nutrition-conscious housewife.

How can Tora Food actually save you money? The ingredients listed above would cost you 87.33¢ at current price levels, if you bought them individually. You get these *same* ingredients in the *same* amounts for only 54¢ in Red Star Tora Food. That's 33.33¢ saved. (Incidentally, the same amount of brewer's yeast would cost you between 72¢ and 84¢.)

In addition, Tora Food saves you money on …ing and inventories. Instead of buying, stor… …ing and keeping books on 10 or more …dients, you need handle only *one* … Star Tora Food.

… improve saleability

…sify the flavor of …avor with the … product

ora

we've …ut baby …tar Tora …ther types …o big advan… butter, sauce …ed yeast and …

…any food processor) …ting nutrition story, …y to show and discuss …s that has been done. Or …ppy to have a nutritionist …ne address below.

low cost

Let Tora Food® help you make money— with these plus factors for your product:

- ANTIOXIDANT EFFECT—INCREASES SHELF LIFE
- FLAVOR BOOSTING EFFECT
- 50% HIGH QUALITY PROTEIN
- EXCELLENT SOURCE OF B COMPLEX VITAMINS
- LOW SODIUM CONTENT—VIRTUALLY SALT FREE
- COMPATIBLE WITH ALMOST ANY PROCESSED FOOD

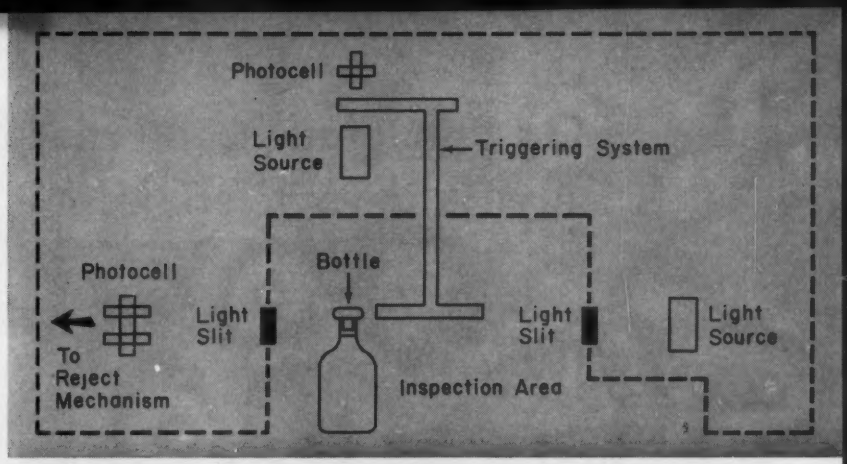
Our technical staff will be pleased to discuss Tora Food with you and your staff. Write or call collect for conference appointment or detailed information. There is no obligation.

Nutrition… Division

RED STAR YEAST & PRODUCTS CO.

Milwaukee 1, Wisconsin

Automatic bottle-inspection system that hooks up unique photocell arrangement with detect-reject mechanism . . . ▶



. . . is compact and easy to install, can handle as many as 400 bottles per minute, and is designed to provide . . . ▶

. . . Surer Fill-Height Control

NEW "PHOTO-EYE" system shown above may be just the answer to your bottle-inspection problem. Successfully used at Miller Brewing (Milwaukee), it automatically inspects filled bottles (12-oz) as they're discharged from pasteurizer, and rejects short- and long-fills.

The inspection unit, which can be used for any size, style, or color bottle, consists of two photoelectric circuits. First one is hooked up to a starwheel-type bottle indexer that triggers the second one's photo-eye assembly. It's this second circuit that detects high-low fill levels and activates the pneumatically-operated reject mechanism.

What are the gains? Miller, stressing that the set-up abolishes eye strain in bottle-inspection work, lists these important benefits:

. . . Reliability is far superior to visual inspection.

. . . Multi-function performance — with simultaneous under- and over-fill detection and rejection.

. . . High speed output—Miller's single unit handles 400 bpm coming from pasteurizer.

. . . Ease of installation. Compact (6 sq ft) inspector straddles conveyor assembly, is installed without any change to existing equipment, and can be geared to operate at same speed as filling line (since bottle-indexer is synchronized with operation of inspection-rejection system).

. . . Smooth operation. Detecting system's "no-bottle, no-fill" mechanism is triggered only when container's own movement (on conveyor) drives the motorless indexer.

Yesterday's system — Artificial illumination, from partially enclosed fluorescent fixtures, was subdued to reduce bottle checker's eye strain. High-low levels were visually determined with aid of horizontal guide wires. Rejects were then hand-picked off the conveyor line.

Today's system—Fill-height detector-rejector system operates on 115 V. inspector. Triggering circuit (Industrial Automation) comprises narrow-beam light sources from filament lamps and photoconductive detecting cells (cadmium sulfide, the semiconductive material) whose conductivity depends upon illumination intensities. Conduction is based on the principle of increasing light flux at photocell, decreasing its resistance and increasing output

JOHN V. ZIEMBA
Senior Associate Editor, "Food Engineering"

Indicating Pneumatic Controller Is Fully Field-Serviceable!

1150 Series for TEMPERATURE or PRESSURE

Introduced less than a year ago, this Robertshaw Controller, Transmitter and Receiver/Controller has found wide acceptance where process applications demand economy, precision and serviceability. The new non-bleed relay now offers even greater value.

- Proportional action—0.5% to 200%
- Automatic reset optional
- Fully compensated thermal system
- Open construction; easily serviced or recalibrated
- Fewer pivots: low hysteresis, added sturdiness
- Manual adjustments; no tools needed
- Temperature ranges: —30 to +450° F., in 200° bands
- Pressure ranges 0-20 psi., 3-15 psi., 0-150 psi.

Complete specifications in RG-757

Robertshaw®
MR. CONTROLS
Robertshaw-Fulton Controls Co.
FULTON SYLPHON DIVISION, KNOXVILLE 1, TENNESSEE

current that's directly used (without amplification) to energize a sensitive reject relay.

Look, Ma—No Filters

Unique factor about the circuits is that they don't use color-absorbing filters for light-focusing (upon photo cells). Cells' semiconductor has a wide spectral sensitivity that extends through the visible range. And the bottle serves as the lens.

Here's how the new set-up assures correct fills for Miller:

As conveyed bottle goes through the neck-high starwheel (six slots), triggering circuit energizes the inspection system to indicate that bottle's in detecting position. Light flux passing the filled jug fires a thyratron which, in turn, kicks off the inspection circuit.

If liquid level is below the preset mark (slitted light-source level), light fluxes hitting high- and low-level photocells are of the same intensities. Both photocells are then arranged (through circuit hook-up) to complete the circuit for reject relay that energizes solenoid-operating rubber suction cups mounted on a 12-pocket, motor-driven reject starwheel (Owens-Illinois Glass). Short-fills are then automatically vacuum-pulled off the conveyor and deposited into a disc-type accumulator table.

Over-fills are inspected and rejected the same way. Only difference is that electronic circuit is hooked up to operate reject relay when light fluxes striking high-low photocells are of reduced intensities.

Normal fills (when liquid level is within pre-set maximum-minimum heights) pass through inspection system. Circuit is arranged so that light flux bombarding lower photocell is of lower intensity, higher at the upper cell.

This way, circuit is electronically hooked up with photocells and relays to make reject mechanism function in accordance with light intensities. For example, unit doesn't function (bottle is at desired fill level) when light intensities striking low and high cells are low and high, respectively. On the other hand, it's activated on low fills (when intensities striking both cells are high) and high fills (when intensities are low).

In the works at Miller is an additional feature—a device which will enable inspection unit to spot uncrowned bottles. (End)

Sales-proved clarity and longer shelf life with Celite Filtration

Products such as juices, jellies, salad and cooking oils require sparkling clarity to sell. Filter them with Celite® diatomite and they'll surely stand out in any company. Celite gives them the brilliant clarity that makes shoppers stop and take notice. And it does this at the lowest possible cost.

Celite filters out the most minute solids and impurities which could otherwise affect clarity and shorten shelf life. What's more, it provides a truly polished appearance at the fastest flow rates obtainable. Filtering with Celite is a trouble-free, virtually automatic process. With the widest selection of standard and special grades from the most dependable diatomite source in the field, Celite will give you the exact degree of clarity desired. And, in addition, Celite grades now include Celite perlite. See your J-M Filtration Engineer for full details or write Johns-Manville, Box 14, New York 16, N. Y. In Canada: Port Credit, Ontario.

Celite Division filter aids, when used as such, are not considered food additives as defined by FD&C Act Amended, Section 201(s).

JOHNS-MANVILLE

CIRCLE 101 ON READER SERVICE CARD 101

KELCO COMPANY

technical bulletin

Use unique Kelco Algin Colloids to improve your food products

In Frozen Foods, Kelcoloid, in acid to neutral foods having oil-water systems, provides emulsion stability. Coarse ice crystal formation is retarded. Kelcoloid holds structure of food, maintains smooth uniform texture, and promotes complete flavor release.

In Gravies, and in Cream, Meat and Barbecue Sauces, Kelcoloid provides efficient emulsion stability, and aids in thickening and bodying, too. Kelcoloid produces properly stabilized, free-flowing sauces that are homogeneous and eye appealing, with clean full flavor. Shelf life is measurably extended.

In Salad Dressings, Kelcoloid, highly efficient stabilizer, prevents body separation and markedly increases shelf life. Kelcoloid promotes a uniform, smooth consistency giving dressings a highly desirable, palatable appearance.

No Surer Way to Achieve Effective Emulsion Stability

KELCOLOID HVF, the high viscosity member of this series, is generally recommended for use where a decided increase in viscosity is desired along with effective emulsion stability.

KELCOLOID LVF, the low viscosity member of this algin series, produces excellent emulsion stability and desirable body qualities. The LVF is recommended for use where a high degree of emulsion stability is desired with a minimum change in viscosity and body properties.

YOURS ON REQUEST: Free samples of KELCOLOID and other Kelco algin products, plus Technical Data describing properties, advantages and uses. At your service, too, are highly qualified food technicians ready to give individual attention to your problems. Write without obligation to your nearest Kelco regional office.

Kelcoloid HVF® Kelcoloid LVF® products of Kelco Company

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Creating

The Package

INDIVIDUAL ENVELOPES, used in packaging both frozen (top) and unfrozen (bottom) wafers, combine with foil-wrapped package for extra moisture protection.

Vapor-Proof Carton Sparks Frozen Candy Sales

Foil-wrapped package aids Wallace wafers in switch from candy aisles to supermarket frozen food cabinets. Firm adds two new flavors

TEST IS OVER and a revolutionary frozen product, Wafer Thin candy from Wallace & Co., is on its way to topsy-like sales success in a modern moisture-proof package.

The Brooklyn, N. Y., subsidiary of Frank G. Shattuck Co. is adding two new flavors, Coffee and Black Raspberry, to the original chocolate-covered Mint and expects to gross over $2 million within the next 15 mo.

What's so unusual about Wallace Wafers? Answer: They are the first candy products to be distributed through frozen food channels and sold from supermarket chains.

Why frozen? Why should a candy-maker take a product that has been a solid success for many years in confectionery stores, and more recently in supermarket candy aisles, and put it in frozen food cabinets?

According to Pres. Herbert L. Bebar, there are several reasons. Principally, it's because freezing:

► Allows year 'round sales for a product that is often relegated to seasonal promotion and appeal.

► Puts candy in the heavily-trafficked frozen food section, creating added impulse appeal for the housewife who comes in for staples and does not think of making a special trip to the candy aisle.

► Ends spoilage and staleing with frozen's indefinite storage life.

There are other good reasons that answer "Why frozen candy?" For example, southern sections of the country have proven to be only limited marketing areas because of short storage life caused by 12-mo. hot weather. But frozen candy makes any section a year 'round market.

Two-Way Eating

For the consumer, there are extra features. Wafers may be eaten frozen or allowed to thaw without melting, and are convenient for emergencies. After thawing, candies may be held a week or more at normal room temperatures without spoiling but should not be refrozen.

Pioneer candy has been a long time coming, according to Bebar, who points out that "eighteen months of experimentation were spent to get the chocolate to re-

tain color and flavor under prolonged zero storage."

Problem here is separation of cocoa butter from the emulsion, whereby it rises to the top and causes discoloration or "bloom." Wallace has made its wafers "bloom-resistant" via an exclusive technique and special modifications such as a change in butylated hydroxyanisole content.

Wallace uses a practical but attractive package for their frozen candies. Colorfully foil-wrapped (Rayseal) with offset duotone, thins are sold in sizes: 4-oz. (39¢), 6¾-oz. (79¢), 9-oz. ($1), and 1-lb. ($1.69). Prices are East Coast.

Each mint is square and wrapped in individual envelopes (glassine), which form an extra vapor barrier in addition to the moisture protection afforded by the foil overwrap.

Milton Neill Co. and Milprint provided the design which emphasizes the "New" and "Frozen" features. Three sample candy-filled envelopes are illustrated for added effect.

Thin mints are actually nothing new to Wallace & Co. Firm has been producing what they call the "thinnest chocolate-coated wafers" in the industry for several years. Main reason behind the "thin" shape is the increased quantity per pound. About 60/lb. is reported for the Wallace product while the thicker round wafers on the market average about 35-45/lb.

Standard processing methods are employed in producing the wafers, according to Bebar, except "for our modifications." Chocolate coating is applied to filler cream via an enrober (National Equipment Co.) and is packaged with a Scandia wrapper.

Candies are fed by belt to an air-conditioned packing room and hand-packed into the individual envelopes for either the standard package (Wallace still turns out regular quantities of non-frozen wafers) or the new frozen candy package.

BELT-FED to packing room, wafers are handpacked into glassine packets. As yet, manual filling is the most efficient method available to Wallace & Co.

Redesigned Sealer

Semi-automatic machinery is used for the sealing operation. Wallace engineers refined the original equipment to insure a vapor-proof seal.

Freezing operation is carried out about 30 min. after candy is processed, when flavor and consistency is at a peak.

Original market tests for Thin Mint Wafers included two weeks' observation in 22 stores. Product was overpriced 25% and carried no promotion (media or point-of-sale), but still managed to achieve sales turnover.

Initial success prompted heavy advertising in the Metropolitan New York area via radio, newspaper, and television. Trio of promotional features included "kitchen-fresh" flavor, convenience for unexpected company, and marriage of a top impulse item with big volume staple buying.

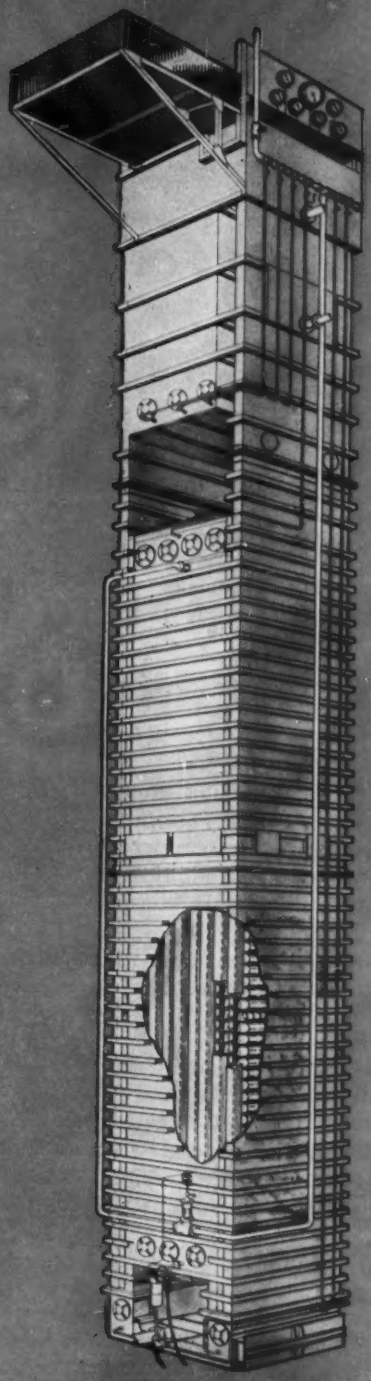
Thin Mints are now in national distribution in most major chains, including Kroger, Food Fair, Grand Union, and A & P.

Other attempts have been made to sell frozen candy but these have been tried through drug stores and confectioneries. Wallace is the first to use brokers, distributors, and chains, as well as the first to merchandise out of frozen food cabinets.—FE Staff.

REDESIGNED EQUIPMENT allows semi-automatic sealing of vapor-proof package. Airtight seal helps provide indefinite refrigerated storage life.

Now, from France, for your plant and profits

. . . a sensational (and proved) saving step in canning!



For a long time, continuous pressure cooking and cooling presented many problems in mechanics and heat exchange. *But now, a revolution from France!* Introduced just a few years ago, the genuine CARVALLO hydrostatic continuous cooker and cooler has been constantly tested, refined and improved. Today, it is considered the finest unit in the world, matching your own product quality standards.

Only the genuine CARVALLO hydrostatic pressure cooker-cooler gives you these exclusive features . . .

1. **Preheating and Cooling under Integral Counter Flow** saves up to 80% in steam and cooling water.
2. **Fully Automatic Self-controlled Unit,** directly coupled to seamers and labelers or casers, saves 100% in processing labor.
3. **Specially Designed Chains** are rugged, durable. Do not stretch or wear. The end of the carriers are closed by the chains, preventing jamming and lateral friction and damage to the cans and jars.
4. **Hydrostatic Controlled Pressure** insures an absolutely constant temperature during sterilization, eliminates transfer valves and all their troubles. Pressure variations inside and outside of cans are progressive! No exploded peas! No clouded juices! No leaking seams!
5. **Tubular Carriers Unattached to the Conveying Chains** — the same unit can process, without any change parts, cans, jars or bottles in a wide range of sizes and shapes. No jamming through dented cans or broken jars. Easy automatic loading and unloading. Carriers can be removed very quickly for yearly inspection.

Air mail or cable . . .

MAISON FRÉDÉRIC FOUCHÉ

Food Machinery Department
3, route de Saint Denis,
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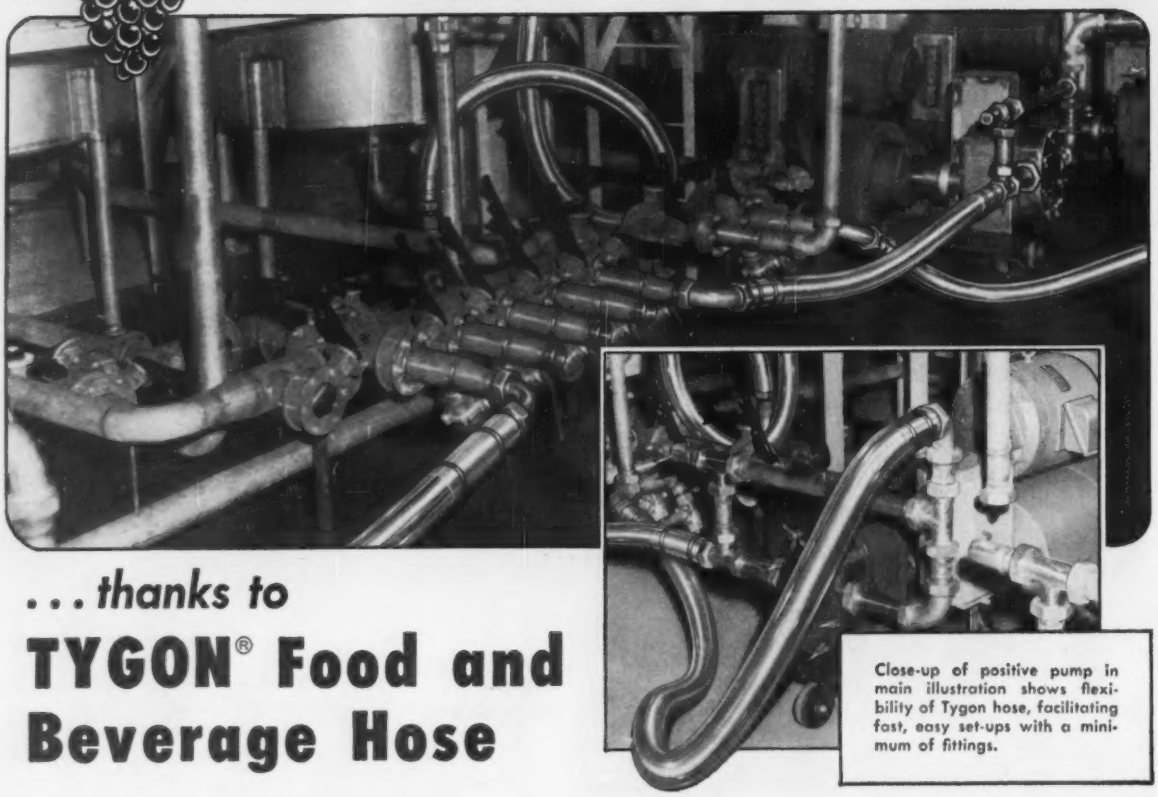
Built in FRANCE by: Maison FREDERIC FOUCHE 8, rue Eugene Varlin, PARIS 10e
Patented and technically directed by: Pierre CARVALLO 24, villa Dupont, PARIS 16e

Grape Juice Processor finds

NEW WAYS TO CUT COSTS



. . . thanks to

TYGON® Food and Beverage Hose

Close-up of positive pump in main illustration shows flexibility of Tygon hose, facilitating fast, easy set-ups with a minimum of fittings.

Glass-clear, flexible, non-toxic Tygon Food and Beverage Hose (Formulation B44-3) has reduced costs for canners, packers and bottlers of all sizes. In addition to conventional applications, The A. F. Murch Company, Paw Paw, Michigan, processor of grape juice concentrate, has used Tygon's unique combination of advantages in unusual ways to get even greater savings.

For example, alert Murch production men took advantage of Tygon's flexibility and ease of coupling to put wheeled platforms under the positive pumps used to transfer juice between process equipment and storage tanks. Now, with Tygon Food and Beverage Hose on both vacuum and discharge sides of the pumps, change-over is a quick and easy process of uncoupling Tygon lines, rolling the pump a short distance and re-coupling Tygon to the proper fittings. Time required? Much less than with rigid pipe. Added benefits: fewer pumps needed, and visual inspection and control of flow afforded by Tygon's clarity.

Wherever liquid or semi-liquid foods or beverages are transmitted, chances are that Tygon Food and Beverage Hose, Formulation B44-3*, can handle the job more conveniently and at lower cost.

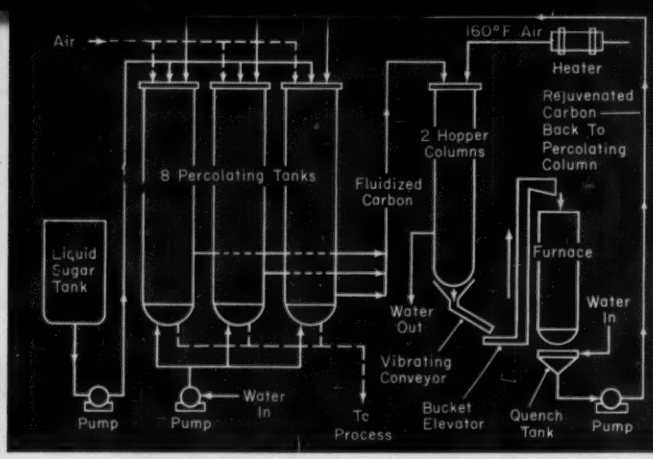
*For processed milk and milk products use Formulation B 44-4.

86-G

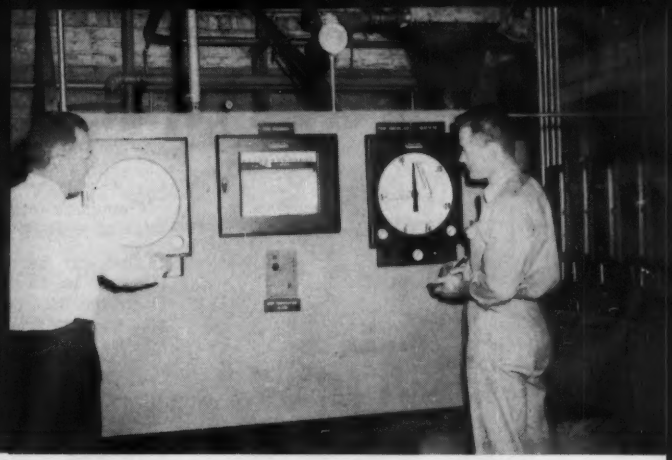
PLASTICS AND SYNTHETICS DIVISION

U. S. STONEWARE
AKRON 9, OHIO

Why not investigate the advantages of using Tygon in your plant? Write today for free illustrated 28-page Bulletin T-100.



STREAMLINED SYSTEM carbon-treats up to 130 gpm. of liquid sugar. After carbon is spent, it goes to a furnace for rejuvenation and subsequent re-use. Unit reconditions up to 15,000 lb. of carbon per day.



AT THIS PANEL, furnace temperatures are automatically recorded and controlled. Squawker sounds when they vary from pre-set points. In addition, meters monitor flow of air and water to percolating columns.

"Laundering" Spent Carbon for Re-use

That's what Inland Sugar does in new decolorizing process that loads carbon with impurities. Wide application seen for cost-cutting system, benefits cited

THROW SPENT CARBON AWAY? Not Inland Sugar Co. of Chicago.

Their special carbon-handling system, which includes an 8-hearth gas-fired furnace, rejuvenates spent carbon for re-use. Moreover, it has eliminated a costly and cumbersome filtration step in their operation.

Significantly, this cost-cutting system can be adapted by any user of activated carbon in quantities that justify recovery—processors of corn syrup, oils, wines, for example.

Inland's problem — Formerly, they decolorized liquid sugar by adding powdered activated carbon and running the slurry through four plate-and-frame filter presses. It took two men about three hours to open, clean, and set up a press for each four-hour filtration run. Spent carbon containing some ½% sugar had to be discarded, while 6-10 Brix sweet water had to be recovered.

GENE SYVERSON and RUDY TIMMER
Vice President and Production Manager, Inland Sugar Co., Chicago

The answer—Inland decided to recover the carbon and came up with a better decolorizing process to boot. Here's why:

... **Dollar savings** on carbon are substantial. System hasn't been operating long enough for Inland to quote figures, but they are no longer flushing carbon to the sewer after a single use.

... **Space saving of some 900 sq. ft. has been achieved.** This was space formerly occupied by filter presses.

... **Decolorizing is simplified.** Liquid sugar is now percolated through any number of eight columns (in series or parallel) containing granular carbon of 12 to 40 mesh.

... **Takes only one man to operate.** Operator simply discharges spent carbon from column and feeds it to furnace. When rejuvenated, carbon goes back to same column for re-use.

... **Minimizes sugar losses.** There's little sweet water to recover and reprocess, nor is sugar absorbed by the carbon granules.

... **System's flexibility** assures closer control of color and impurity removal.

... **Working conditions are improved.** Decolorizing and carbon-recovering are now cleaner operations. Entire system is closed and operated outside the refinery, and men no longer have to open and close filters.

How System Works

Washed raw sugar is transferred from a 10,000-gal. tank to percolating columns (9x14 ft.) by a 10-hp. centrifugal pump. Pattern of flow through the columns is determined by laboratory analysis of raw sugar being handled. Throughput ranges 30 to 130 gpm., depending on number of columns used and their arrangement. Treated liquid sugar then goes to a monobed ion-exchange system.

When column is exhausted (after about two weeks run), carbon is readied for rejuvenation. Water is run into column to "sweeten" it off, and it also is pump-recirculated through column to "fluidize" the carbon (26,000 lb.).

Resulting "liquid carbon" is pumped to one of two hopper columns, water is drained and hot air (160F.) is introduced to dry the carbon. Latter (about 40% moisture) drops into a hopper feeding a vibrating pan. It discharges into a closed bucket-type elevator feeding the furnace (4½ x 13 ft.). Rate of carbon feed is adjusted by changing vibrating frequencies of pan and variable-speed drive on elevator.

The gas-fired furnace (Nichols-

Grandma could get away with it!

Grandma's recipes were a pinch of this and a dibby-dab of that.

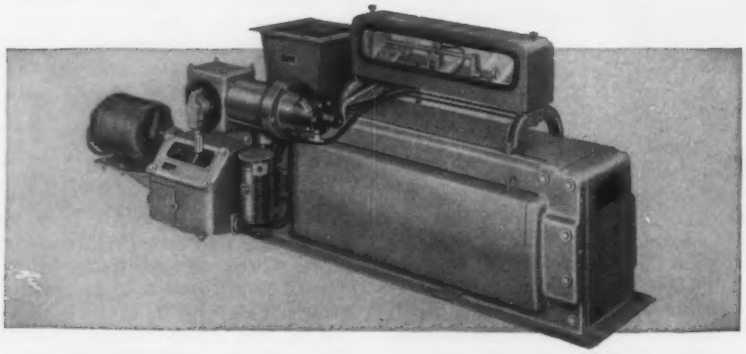
That was fine for Grandma. But it won't work in process blending. Here, you need precise control, minute-to-minute accuracy, exact formulations.

And you get just this and more with W&T's Merchen Scale Feeders and Meters. They control or measure feed rates by weight. There's no guess work. You get exactly what you set the equipment for . . . yields are known; quality is controlled.

You can feed any free-flowing solid in batch or continuous blending operations . . . as little as 3 lbs. per minute; as much as 3000.

And you do it with W&T's rugged, compact Merchen equipment—built for performance . . . built to give you profit-making control . . . built to take the "Grandma" out of your process blending.

Interested? Write Dept. M-49.37.



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W&T controlled chlorination saves water and lowers treatment costs. You get maximum water value and use... even reuse.

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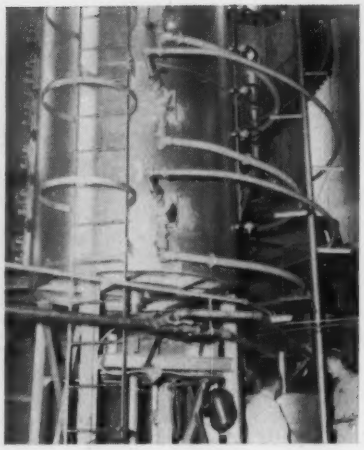
WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY



FURNACE has eight hearths onto which carbon is fed and heated by 1,800-F. gases. Burnt carbon drops into quench tank, is fluidized, and piped to any of eight columns.

Herreshoff, Nichols Engineering & Research Corp., N. Y. C.) consists of eight circular hearths, one above another and enclosed by a refractory-lined steel shell. A vertical rotating shaft (through center of furnace) carries arms with rabble blades that stir the charge and move it in a spiral path across each hearth.

Carbon is fed to top hearth, and rabbled across to pass through drop holes to each hearth below. Burning occurs in three hearths fed counter-currently by 1,850-F. gases. Remaining five hearths serve as dryers. In this manner, furnace rejuvenates 15,000 lb. of carbon daily.

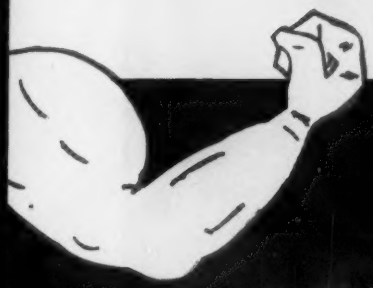
Burnt carbon next drops into a float-controlled quench tank, from which fluidized carbon is pumped to percolating column. Hot gases from top hearth are exhausted through a cyclone and recirculated by blower through bottom of furnace. Carbon recovered in the cyclone is piped to quench tank.

Fluidizing the carbon for two-way transfer between column and furnace minimizes carbon loss, also checks break up of carbon granules into fines.

Controls — They're mounted on two panel boards. On one are two flowmeters (Fischer-Porter), for air and water fed to columns. Mounted on other panel board are multipoint temperature recorder-controllers (Brown) hooked up to furnace. A squawker sounds whenever temperatures vary from preset points. (End)

CIRCLE 109 ON READER SERVICE CARD →

PROTEIN 29% HIGHER



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for High-Protein Health Appeal

Griffith's New
Sodium Proteinates
ISOPRO (pH 5.3-5.5)
PROMAX® (pH 6.7-7.0)

PROTEINATES FOR SPECIALTY BREADS • BREADINGS • BABY FOODS
SPAGHETTI • DOG FOOD • BREAKFAST CEREAL • USE PERMITTED
IN UNSPECIFIED LOAVES IN FEDERALLY INSPECTED MEAT PLANTS

Griffith drew upon the spice flavor skills of its corps of chemists to solve the research problem of a decade! By patented process of wet-milling soy flour, Griffith *removes that soybean flavor!* Produces economical and stable sodium proteinates that contain 29% more protein and 33% more lysine than soy flour! Learn all the advantages of using either ISOPRO or PROMAX in your products for high-protein health appeal. Write your name and the request, "Send facts on ISO-PRO and PROMAX", on your letterhead and mail it today.

U.S. Patent No. 2,881,076

Griffith

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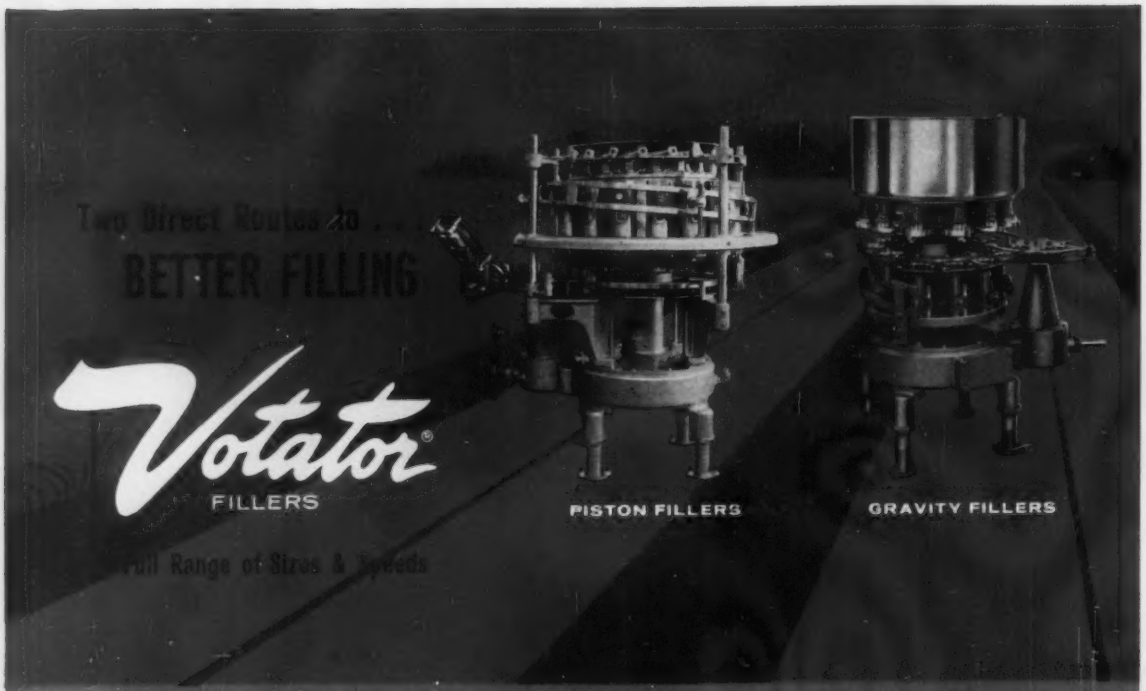
● CHICAGO 9, 1415 W. 37th St. • UNION, N. J., 855 Rahway Ave. • LOS ANGELES 58, 4900 Gifford Ave.



VOTATOR rotary piston fillers offer specific advantages, such as greater rigidity with *four point* suspension—thus greater accuracy, self-cleaning valve seats, fine micrometer adjustment *even while in operation*, and easy accessibility of valve guides, ports and rollers. Large diameter Nylon piston and valve rollers reduce wear. In addition, VOTATOR piston fillers feature high-speed no-container, no-fill mechanism, a fully enclosed gear case, adjustable legs, and a wide variety of valve sizes.

VOTATOR gravity fillers are designed for filling liquids having free flowing characteristics. Special seal pads at the base of the valve assembly make a tight seal possible even if top flange of container is not perfect. Extra large valves reduce foaming and increase accuracy. Extra long valve sleeves provide smoother operation, reduce leakage and prevent sticking. Changes for different size containers are quick and easy. Adjustable legs, fully enclosed gear case, a variety of valve sizes and Nylon lifter rollers are more features of VOTATOR gravity fillers.

Model No.*	P6L	P9L	P12L	P18	P18L	P27	P27L	P36	P36L	P6G	P9G
Max. Capacity of Fill (oz.)	40	40	40	20	40	20	40	20	40	160	160
Max. Container Dia.	404	404	404	303	404	303	404	303	404	610	610

Model No.*	G6L	G9L	G12L	G18	G18L	G27	G27L	G36	G36L	G6G	G9G
Max. Capacity of Fill (oz.)	48	48	48	32	48	32	48	32	48	128	128
Max. Container Dia.	404	404	404	303	404	303	404	303	404	603	603

Let us show you which is best for you

VOTATOR Fillers are designed to provide accuracy and speed throughout all practical production ranges and container sizes.

In both the piston and gravity types, ranging from 6 through 36 stations, smoothness of operation, ease of integration with associated equipment, rugged, trouble-free construction, and expert know-how and service on each individual installation assure top packaging performance and economy.

Write or call for additional specific information. Bulletins describing both piston and gravity fillers are available upon request. There is no obligation.

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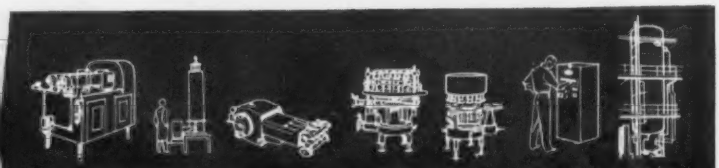


VOTATOR CONTINUOUS PROCESSING EQUIPMENT FOR CHEMICAL & FOOD INDUSTRIES • VOTATOR PISTON & GRAVITY FILLERS • VOTATOR PLANTS FOR FATTY OILS INDUSTRY • THERMEX DIELECTRIC HEATING EQUIPMENT

New Food Preservative Developed

A novel food preservative was developed to preserve food over long periods of time without refrigeration. Other objectives were: To provide a preservative which is readily mixed from easily available ingredients; extremely economical to prepare; especially adaptable to preserve meats; and can be placed together with food to be preserved in a container which is evacuated and sealed.

The following ingredients are necessary for preparation:

(1) Root and stalk from the corn plant;

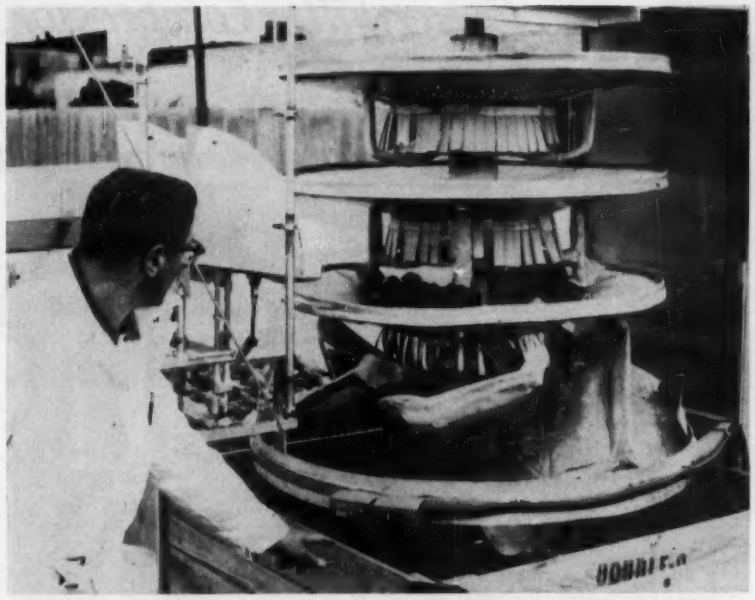
(2) Root and flower of the dandelion plant;

(3) Root and stem of the tomato plant.

These separate ingredients are ground and pressed, and the expressed liquids are extracted. The liquids are then mixed in the following approximate proportions by volume: 15 parts corn, 1 part dandelion, and 1.5 parts tomato.

The liquids, after being mixed in the above proportions, are combined and brought to the boiling point, about 450F. Thereafter, the combined liquids are cooled and strained. Preferably, a small amount of sodium benzoate, 0.1%, or its equivalent, is added to the mixed and strained liquids.

In use, the food to be preserved is placed in a container with a quantity of this preservative. Air is evacuated from the container and the latter is sealed. The food will then be preserved over a long period of time without refrigeration. In practice, this preservative has successfully preserved various types of meat for long periods of time. Foods other than meats, however, may be similarly preserved.—U. S. Patent 2,937,948, May 24, 1960.



New automatic pallet box filler for packing fruit promises packers a big saving in operating costs with very little damage to fruit. (U. S. D. A. photo.)

Automatic Pallet Box Filler Saves Time and Labor

The new unit (photo) developed by Agricultural Marketing Service eases fruit down a series of rotating disks and baffles and into the pallet box.

At start of operation, entire filler is lowered into empty pallet box. As fruit flows in, an hydraulic lift moves filler upward until fruit reaches top of box, then mechanism turns itself off.

Only one worker is needed—and then only part-time—to attend the filler. Just 14 sec. of production labor are required to change boxes. The mechanical filler can pack one box every 5 min., or 6.77 standard apple box equivalents per min.

The design makes filler suitable for either a right angle or a straight-through packing line layout. Both installations permit an efficient handling operation. Experienced operators need only 16 sec. to change boxes with right angle layout, 14 sec. with straight-through line. — *Agricultural Marketing* (USDA), May, 1960.

Freezing and Defrosting Effect on Doughnuts

In the freezing of packaged doughnuts, forced air circulation at rates exceeding 500 linear ft./min. do not appear to produce additional benefits in lowered rate of freezing. For doughnuts to be stored at 0F, freezer temperatures of —10F or —20F will greatly lower the freezing time. There is a material gain in speed of defrosting through use of elevated temperature (115F) and forced air circulation at 500 ft./min.

Freezing and defrosting lowered the freshness of doughnuts, but had far less effect than standing at room temperature for 24 hr. Within the limits employed, differences in freezing and defrosting time had only minor effects on freshness or firmness of doughnuts.

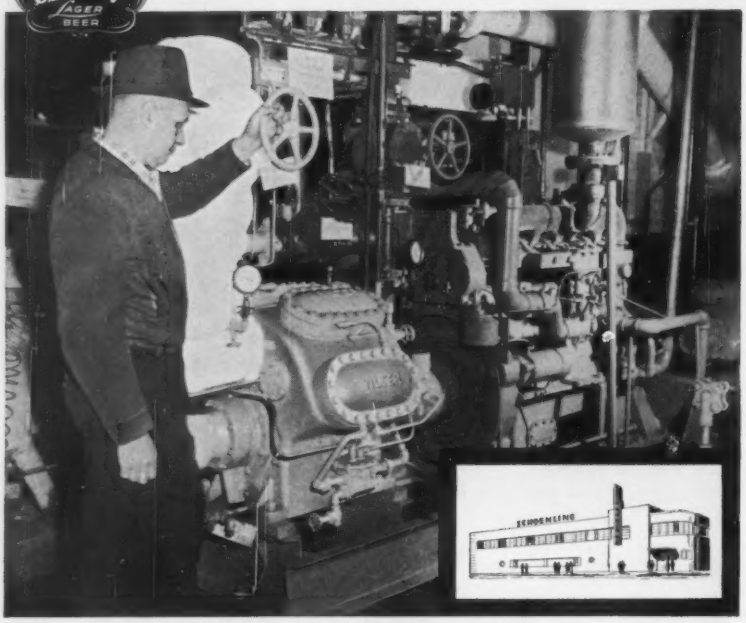
If speed of freezing is of major importance, doughnuts may be frozen unwrapped with little moisture loss. Appreciable moisture loss occurs during defrosting of unwrapped doughnuts and this practice is not recommended. For frozen storage the temperature 0F appears adequately low. Above this temperature doughnuts become stale and firm rather rapidly. — *Food Tech.*, 391-394, Aug., 1960.

Cottage Cheese Creaming Studied

A method was devised for measuring the amount of free dressing or free liquid in a carton of creamed cottage cheese. This entailed standardizing size of draining surface, time, temperature, and other

Top Efficiency Brewing Schoenling with a Gas Driven Vilter Compressor

The Schoenling Brewing Co., Cincinnati, has earned a reputation for fine beer with **Schoenling Cincinnati's Finest.**



Mr. Raymond Winterhalter, Chief Engineer, The Schoenling Brewing Co., inspecting the gas driven Vilter VMC ammonia compressor. Inset shows exterior view of the brewery.

To most efficiently meet summer brewery refrigeration requirements, the Schoenling Brewing Co. has added a Vilter 8-cylinder VMC ammonia compressor driven by a natural gas engine to its earlier purchased electric motor driven Vilter compressors.

By switching to the natural gas engine driven compressor during the summer months, when its gas requirement for heating purposes is reduced, Schoenling is able to utilize the major portion of the gas charged for, thereby reducing electric power demand and effecting considerable savings.

The natural gas engine driven compressor is especially ideal where capacity reduction is necessary to match widely fluctuating loads. Automatic speed regulation of the power unit can be supplied so that, together with the automatic capacity control available on Vilter VMC compressors, the most economical engine speed to suit the refrigeration requirements is automatically selected and maintained.

Schoenling is well pleased with the operation of the gas driven Vilter VMC compressor, and as a result of the reliability obtained, they have been able to reduce their cost of operation.

Almost 90 years of service to the brewing industry has given Vilter the necessary experience to produce the superior refrigeration equipment used with satisfaction in hundreds of breweries throughout the world. Let our qualified engineers help you with your problems.

Sold through Vilter Distributor, C. P. Wood and Company, Cincinnati

Vilter® refrigeration air conditioning

The Vilter Manufacturing Company
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Air Units • Ammonia and Freon Compressors • Booster Compressors Baudelot Coolers • Water and Brine Coolers • Blast Freezers Evaporative and Shell and Tube Condensers • Pipe Coils Valves and Fittings • Pakice and Polarflake Ice machines.

Write for Bulletin 017 to The Vilter Manufacturing Company, Dept. E-602 2217 South First Street Milwaukee 7, Wisconsin

Advances in Technology

conditions having possible effects on such an empirical test.

Increases in the following factors increased the amount of dressing retained per 100 g. of curd and decreased curd firmness: Holding time after creaming, curd breakage, pH, and fat in the finished cheese—providing the increase in fat was attained by adding more dressing with the same fat content.

Higher temperature of holding creamed cheese decreased firmness of curd but had little effect on amount of dressing retained. Adding stabilizers to thicken the dressing or increasing pressures used for homogenizing dressing caused more retention of dressing. Increasing salt from 0 to 2% increased the amount of dressing retained and decreased firmness of curd. But adding higher percentages reversed these effects.

Two separate mechanisms affecting the retention of dressing by curd may be at work: One is the absorption of serum from the dressing by the curd; the other is adsorption of dressing on the surface of the curd.—*J. of Dairy Science*, 931-944, July, 1960.

Fines Separated, Pelletized To Aid Coffee Extraction

Crux of a recently patented process for production of a concentrated coffee extract is separation of fines from coarse fraction of ground roasted beans, then forming them into pellets that are larger than the coarse fractions.

Pellets are mixed with coarse fraction and mixture deposited in elongated extractor so the fines are localized in voids between coarser particles. This is followed by water extraction of soluble solids.—U. S. Patent 2,931,727, Mar. 29, 1960.

Honey Dehydrated By Continuous Process

A continuous process has been developed on a pilot-plant scale for producing dried honey. The product has color and flavor quite close to that of the original honey; has free - flowing, granular physical form; and has long shelf life.

It can be produced from both table and baking grades of honey, and either with or without the addition of sucrose before drying. The addition of sucrose raises the temperature at which the dried product will soften and thus makes

Citric acid in a hurry...

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Whether you need a little or a lot, there's always a nearby ample supply of Miles Citric Acid, U.S.P. No waiting. No fidgeting. A phone call starts your order on the way.

And it is from a new (but experienced) source . . . Miles Chemical Company, a division of Miles Laboratories, Inc. Miles has been in the citric acid business for more than a decade. But until recently, the entire output was tagged for Miles' own pharmaceuticals.

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19-60

CLEANER, QUICKER CONVEYING OF WRAPPED OR UNWRAPPED FOODS

Wendway efficiently conveys food products of any kind . . . up, over, down and around to any point in your plant. Wendway eliminates multiple handling, saves man-hours, floor space and equipment. Wendway can solve your conveying problems and make you more profits, too!

As sliced cold meats travel by on stainless steel Wendway belting, operator labels each type as they proceed to the automatic packaging machine.

Packages, cartons or boxes ride perfectly on Wendway's smooth, silent belting. Products stay clean and unhandled from one operation to the next.

Here you see sliced luncheon meats travelling from wrapping machine to bag sealing station and on to packing station. Wendway belt speeds are synchronized to desired production speed.

Where solid belt conveyors are needed, canvas, Neoprene rubber, etc., can be supplied to meet the specific requirement. Remember . . . in your plant you can go *Anywhere* with *Wendway!*

Gentlemen: Please send me complete information about the versatile Wendway Conveyor Systems for _____

Name _____

Company _____

Street _____

City _____ Zone _____ State _____

☐ Please have a Wendway engineer contact me at once.

Advances in Technology

it more resistant to caking at elevated temperatures. Honey essence of high potency and true aroma character can be obtained as a by-product.

The estimated cost of dried product on a commercial scale is 28.1 cents/lb., using liquid honey with 82% solids at 15 cents/lb.

The dried honey has applications in commercial baking, in confectionery making, and in the production of packaged dry baking mixes. —*Food Tech,* 387-390, Aug., 1960.

Chlorides, Pasteurizaton, Diacetyl Tests Simplified

A direct titrimetric method, using mercuric nitrate with diphenyl carbazone as indicator, for the determination of chlorides in beer is presented. No pre-treatment of the beer is necessary.

A test for the presence of invertase in beer, and so a test for pasteurization, has been developed. It uses a commercially available indicating paper strip to detect glucose produced by the invertase from added sucrose.

A determination of diacetyl in beer, which requires smaller volumes of beer and less time than the presently available method, has been developed.—*Paper by J. L. Owades and J. Jakovac,* presented at Amer. Soc. Brewing Chemists Convention, Minneapolis, May 1960.

New Storage Bin Unloader Turns Tables on Solids

Already in operation on wood shavings and splinters from a furniture factory, a recently invented bin unloader is seen having wide application in the food field.

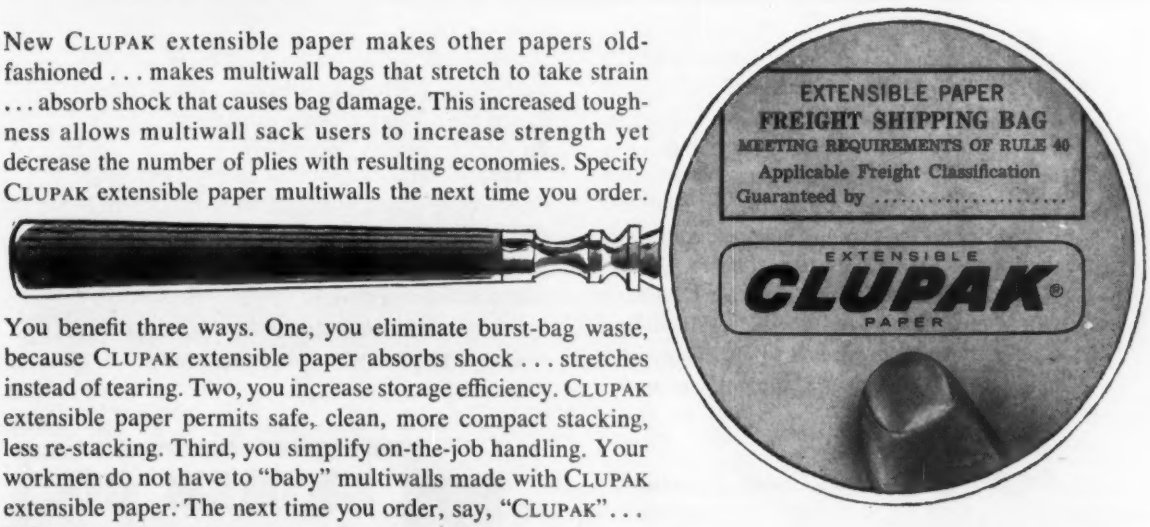
Unloader is simply a hydraulically-operated turntable in bottom of bin that moves at about 1¼ revolution/hr. Table comprises a perforated plate supported on beams built in form of a wheel.

In operation, solids drop through holes in plate and are swept into a conveyor pit by the revolving beams. A hydraulic cylinder, pushing from the edge, develops about 75,000 psi. pressure to keep table moving. Minimum size considered practical to build is 15-ft. dia., for bin of 12,000-15,000 cu. ft.

Inventor is Robert Jorgensen, Jorgensen-Wellford, Inc., Box 4776, Memphis, Tenn.—*Chem. Week,* 58, June 18, 1960.

ELEMENTARY...IT'S A EXTENSIBLE CLUPAK® PAPER* MULTIWALL BAG ...THAT'S WHY IT WON'T BREAK!

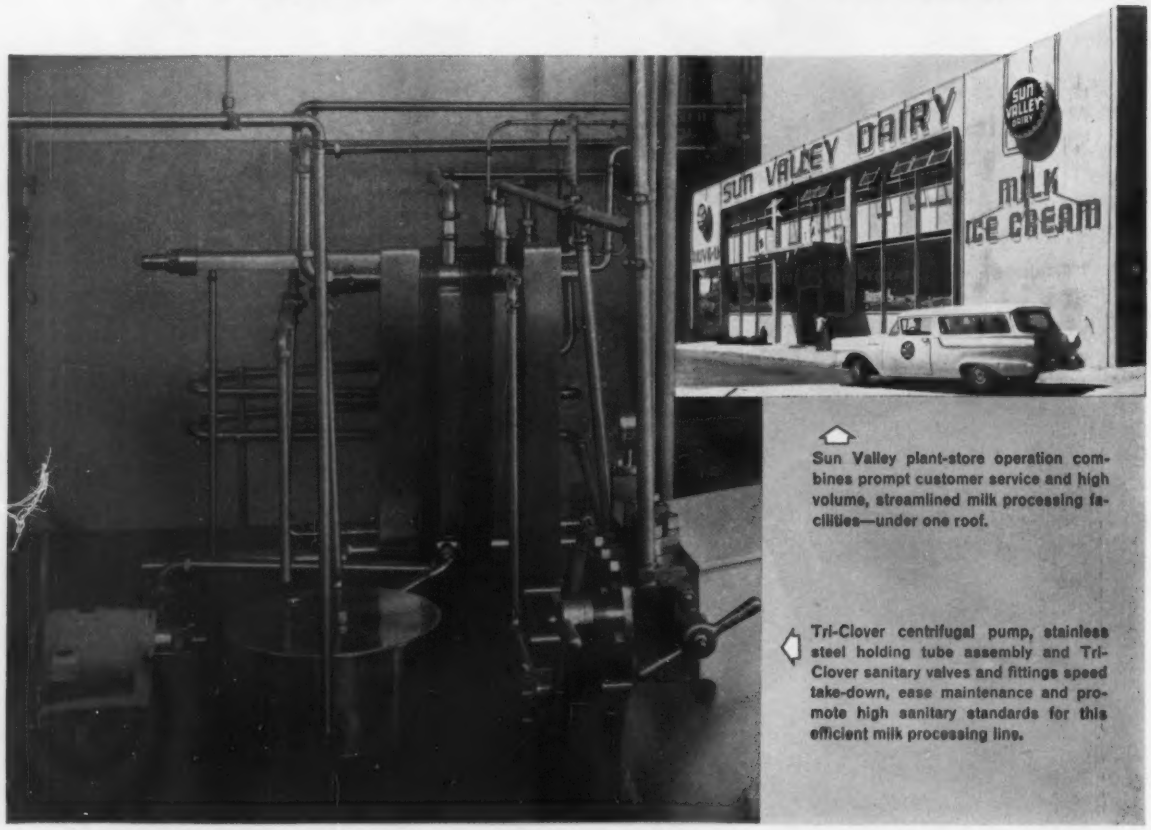
New CLUPAK extensible paper makes other papers old-fashioned . . . makes multiwall bags that stretch to take strain . . . absorb shock that causes bag damage. This increased toughness allows multiwall sack users to increase strength yet decrease the number of plies with resulting economies. Specify CLUPAK extensible paper multiwalls the next time you order.



You benefit three ways. One, you eliminate burst-bag waste, because CLUPAK extensible paper absorbs shock . . . stretches instead of tearing. Two, you increase storage efficiency. CLUPAK extensible paper permits safe, clean, more compact stacking, less re-stacking. Third, you simplify on-the-job handling. Your workmen do not have to "baby" multiwalls made with CLUPAK extensible paper. The next time you order, say, "CLUPAK"... before you say paper.

*Clupak, Inc.'s trademark for extensible paper manufactured under its authority and satisfying its specifications. Clupak, Inc., 530 5th Ave., N. Y. 36, N. Y.

New "Drive-In" Dairy Operation gets processing efficiency in limited space ... utilizes TRI-CLOVER PUMPS and FITTINGS



Sun Valley plant-store operation combines prompt customer service and high volume, streamlined milk processing facilities—under one roof.

Tri-Clover centrifugal pump, stainless steel holding tube assembly and Tri-Clover sanitary valves and fittings speed take-down, ease maintenance and promote high sanitary standards for this efficient milk processing line.

Streamlined efficiency characterizes the high volume, low overhead operation of Sun Valley Dairy in San Francisco, California.

Here in this modern and compact drive-in building, only three or four men are required to process the milk products. In addition, butter, ice cream, etc., are handled as an over-the-counter convenience to customers.

Tri-Clover Division stainless steel sanitary valves and fittings, both bevel seat and Tri-Clamp® types, were selected to provide smooth uninterrupted flow and a minimum of maintenance time and attention. Tri-Clover centrifugal pumps and holding tube assemblies further insure the highest possible sanitary standards for this "on display" operation.

This is another example of why Tri-Clover's pace setting product designs have become the first and *logical* choice wherever modern streamlined processing calls for the ultimate in both utility and protection.

Let our engineering department help plan *your* next processing or CIP installation.

S-280

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FDA Rules on Variety of Additives

Radiation Sources, Emulsifiers, Monoglycerides, and Trace Minerals in Feed Included in Latest Rulings

LATEST LISTINGS by the FDA cover a variety of additives — sources of radiation, emulsifiers in frozen desserts, distilled acetylated monoglycerides — and trace minerals in animal feed that are generally recognized as safe (GRAS). Also placed in the GRAS class are some 27 synthetic flavorings and adjuncts.

For previous listings, FE readers are referred to FE Jan., p. 81; Feb., p. 19; Mar., p. 89; Apr., p. 99; May, p. 77; June, p. 85; July, p. 85; and Aug., p. 75.

How The FDA Ruled

Sources of radiation for the purposes of inspection of foods, food packages, and for controlling food processes may be safely used under the following conditions:

(a) The radiation source is one of the following:

(1) X-ray tubes producing X-radiation from operation of the tube source at energy levels of 300 kilovolt peak or lower.

(2) Sealed units producing radiations at energy levels of not more than 2.2 million electron volts from one of the following isotopes: Cesium 137, strontium 90.

(b) To assure safe use of these radiation sources, the labels and labeling of the sources shall contain all the following:

(1) Appropriate and accurate information identifying the source of radiation.

(2) Maximum energy levels of the sources.

(3) Adequate directions for installation and use including the statement that no food shall be exposed to the radiation source in excess of 15 minutes.

Polyoxyethylene (20) sorbitan tristearate, which is a mixture of polyoxyethylene ethers of mixed stearic acid esters of sorbitol anhydrides and related compounds, may be used as an emulsifier in ice cream, frozen custard, ice milk, and fruit sherbet, when prepared used in accordance with the following prescribed conditions:

(a) The food additive is manufactured by reacting stearic acid with sorbitol to yield essentially sorbitan tristearate with a maximum acid number of 15 and a maximum water content of 0.2 percent, which is then reacted with ethylene oxide.

(b) The food additive meets the following specifications:

Saponification number 88-98.
Acid number 0-2.
Hydroxyl number 44-60.
Oxyethylene content 46 percent-50 percent.

(c) It is used alone or in combination with polysorbate 80, whereby the maximum amount of these additives, alone or in combination, does not exceed 1,000 parts per million (0.1 percent) of the finished frozen dessert.

(d) To assure safe use of the additive, the label of additive and any intermediate mixes shall contain, in addition to other information required, the following:

(1) The name of the additive, polyoxyethylene (20) sorbitan tristearate.

(2) A statement of the concentration or strength of the additive in the basic raw material or intermediate mixes.

(3) Appropriate and accurate directions, which, when followed, will provide a finished frozen dessert containing no more than the permitted amount of the additive, whether or not intermediate mixes are also used.

Polysorbate 80 (polyoxyethylene (20) sorbitan monooleate), which is a mixture of polyoxyethylene ethers of mixed partial oleic acid esters of sorbitol anhydrides and related compounds, may be used as an emulsifier in ice cream, frozen custard, ice milk, and fruit sherbet, when used in accordance with the following conditions:

(a) The food additive is manufactured by reacting oleic acid with sorbitol to yield essentially sorbitan monooleate with a maximum acid number of 7.5 and a maximum water content of 0.5 percent which is than reacted with ethylene oxide.

(b) The food additive meets the following specifications:

Saponification number 45-55.
Acid number 0-2.
Hydroxyl number 65-80.
Oxyethylene content 65 percent-69.5 percent.

(c) It is used alone or in combination with polyoxyethylene (20) sorbitan tristearate, whereby the maximum amount of the additives, alone or in combination, does not exceed 1,000 parts per million (0.1 percent) of the finished frozen dessert.

(d) To assure safe use of the additive, the label of the additive and any intermediate mixes shall contain, in addition to the other information required by the act. the following:

(1) The name of the additive, polysorbate 80.

(2) A statement of the concentration or strength of the additive in the basic raw material or intermediate mixes.

(3) Appropriate and accurate directions, which, when followed, will provide a finished frozen dessert containing no more than the permitted amount of the additive, whether or not intermediate mixes are used.

GRAS Synthetic Flavorings

Synthetic flavoring substances that are generally recognized as safe for their intended use, within the meaning of section 409 of the act, are as follows:

Acetaldehyde (ethanal)
Acetoin (acetyl methylcarbinol)
Aconitic acid (equisetic acid, citridic acid, achilleic acid)
Anethole (parapropenyl anisole)
Benzaldehyde (benzoic aldehyde)
Brominated vegetable oils
N-Butyric acid (butanoic acid)
d- or l-Carvone (carvol)
Cinnamaldehyde (cinnamic aldehyde)
Citral (2, 6-dimethylocatadien-2, 6-al-8, geranial, neral)
Decanal (N-decylaldehyde, capraldehyde, capric aldehyde, caprinaldehyde, aldehyde C-10)

Diacetyl (2, 3-butandeione)
Ethyl acetate
Ethyl butyrate
3-Methyl-3-phenyl glycidic acid ethyl ester (ethyl-methyl-phenyl-glycidate, so-called strawberry aldehyde, C-16 aldehyde)
Ethyl vanillin
Eugenol
Geraniol (3, 7-dimethyl-2, 6 and 3, 6-octadien-1-ol)
Geranyl acetate (geraniol acetate)
Glycerol (glyceryl) tributyrate (tributyrin, butyrin)
Limonene (d-, l-, and dl)
Linalool (linalol, 3, 7-dimethyl-1, 6-octadien-3-ol)
Linalyl acetate (bergamol)
l-Malic acid
Methyl anthranilate (methyl-2-aminobenzoate)
Piperonal (3, 4-methylenedioxy-benzaldehyde, heliotropin)
Vanillin

Propylene glycol alginate may be used as an emulsifier, stabilizer, or thickener in foods in accordance with the following prescribed conditions:

(a) The additive is the ester of alginic acid and propylene glycol, containing up to 85 percent of the carboxylic acid groups esterified with the remaining groups either free or neutralized.

(b) It is used or intended for use, in accordance with good manufacturing practice, as an emulsifier, stabilizer, or thickener in foods, except confectionery and except in those standardized foods that do not provide for such use.

(c) To insure safe use of the additive, the label of the food additive container shall bear, in addition to the other information required by the act:

(1) The name of the additive, "proplylene glycol alginate" or "propylene glycol ester of alginic acid."

(2) Adequate directions for use.

Trace Minerals in Animal Feed Placed on GRAS List

Trace minerals added to animal feeds as nutritional dietary supplements are generally recognized as safe when added at levels consistent with good feeding practice. Cobalt and copper compounds added to rations of certain species in excess of specified quantities are not generally recognized as safe. These conditions are described in the footnote to the following list:

Element	Source compounds
Cobalt[1]	Cobalt acetate
	Cobalt carbonate
	Cobalt chloride
	Cobalt oxide
	Cobalt sulfate
Copper[1]	Copper carbonate
	Copper chloride
	Copper gluconate
	Copper hydroxide
	Copper oxide
	Copper sulfate
Iodine	Calcium iodate
	Calcium iodobehenate
	Cuprous iodide
	Diiodosalicylic acid
	Ethylene diamine dihydriodide
	Potassium iodate
	Potassium iodide
	Sodium iodide
	Thymol iodide
Iron	Ferric ammonium citrate
	Ferric chloride
	Ferric oxide
	Ferric phosphate
	Ferric pyrophosphate
	Ferrous carbonate
	Ferrous gluconate
	Ferrous sulfate
	Reduced iron
Manganese	Manganese acetate
	Manganese carbonate
	Manganese chloride
	Manganese dioxide
	Manganese gluconate
	Manganese oxide
	Manganese sulfate
	Manganese phosphate (dibasic)
Zinc	Zinc acetate
	Zinc carbonate
	Zinc chloride
	Zinc oxide
	Zinc sulfate

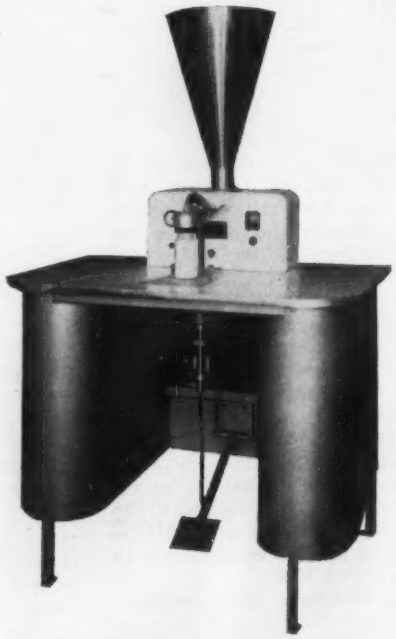
[1] Exceptions to general recognition of safety:

Cobalt added to the rations of non-ruminant species in excess of 0.0001 percent of the total daily feed intake of the animal.

Copper added to the rations of sheep in excess of 0.0010 percent of the total daily feed intake of the animal.

PNEUMATIC
VACUFLOW, Jr.

SEMI AUTOMATIC DUSTLESS POWDER FILLING



Great flexibility. Immediate adjustment to different densities. Switches from non-pulsating to tamping action, at will.

THE VACUFLOW JUNIOR is ideally suited for handling products such as soluble coffee, powdered milk, baby powder, chemicals, insecticides and many other free flowing as well as non-free flowing powders. Its low initial cost and durable, versatile performance means "lower cost per container" — truly typical of Pneumatic bottling and packaging equipment.

PNEUMATIC

PNEUMATIC SCALE CORPORATION, LTD. 91 Newport Avenue, Quincy 71, Mass. Sales Offices: *New York; Chicago; Dallas; Rochester.* Agents: *Fred Todt Company, Los Angeles, San Francisco and Seattle. Rockwell Pneumatic Scale Ltd., London N.W. 2, England; O.R.M.A. Paris, France.* Subsidiaries: *Delamere & Williams Co., Ltd., Toronto; Carbert Manufacturing Co., Inc., Cambridge, Mass.*

No alignment worries! LINK-BELT bucket elevators go

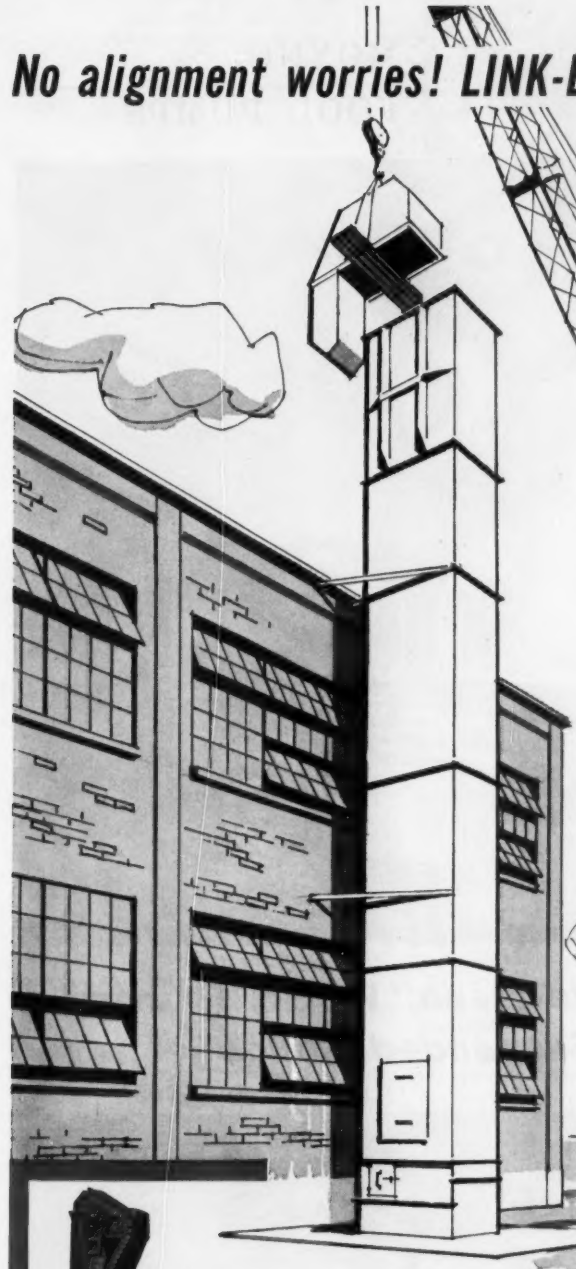
straight up... fast and easy

Factory-aligned components assure low-cost installation, smooth performance

Yes, Link-Belt bucket elevators go up easy . . . and they go up *straight!* There's no misalignment to cause inefficiency, bucket and casing wear.

Link-Belt manufactures *all* bucket elevator components . . . eliminates installation and operational problems in the *factory*, not in the field! All components are carefully designed and manufactured. Casings are jig-welded for perfect, ready alignment. Result: Unnecessary erection costs and difficulties are avoided, long-lasting efficiency assured.

Link-Belt will gladly erect your elevator (large or small) and accept full installation responsibility. For details, contact your nearest Link-Belt office. 15,307-A



INTERNAL DISCHARGE bucket elevator provides an excellent means for the continuous, gentle handling of foodstuff. Double head shafts, operating in fixed bearings, provide a longer interval for bucket discharge.

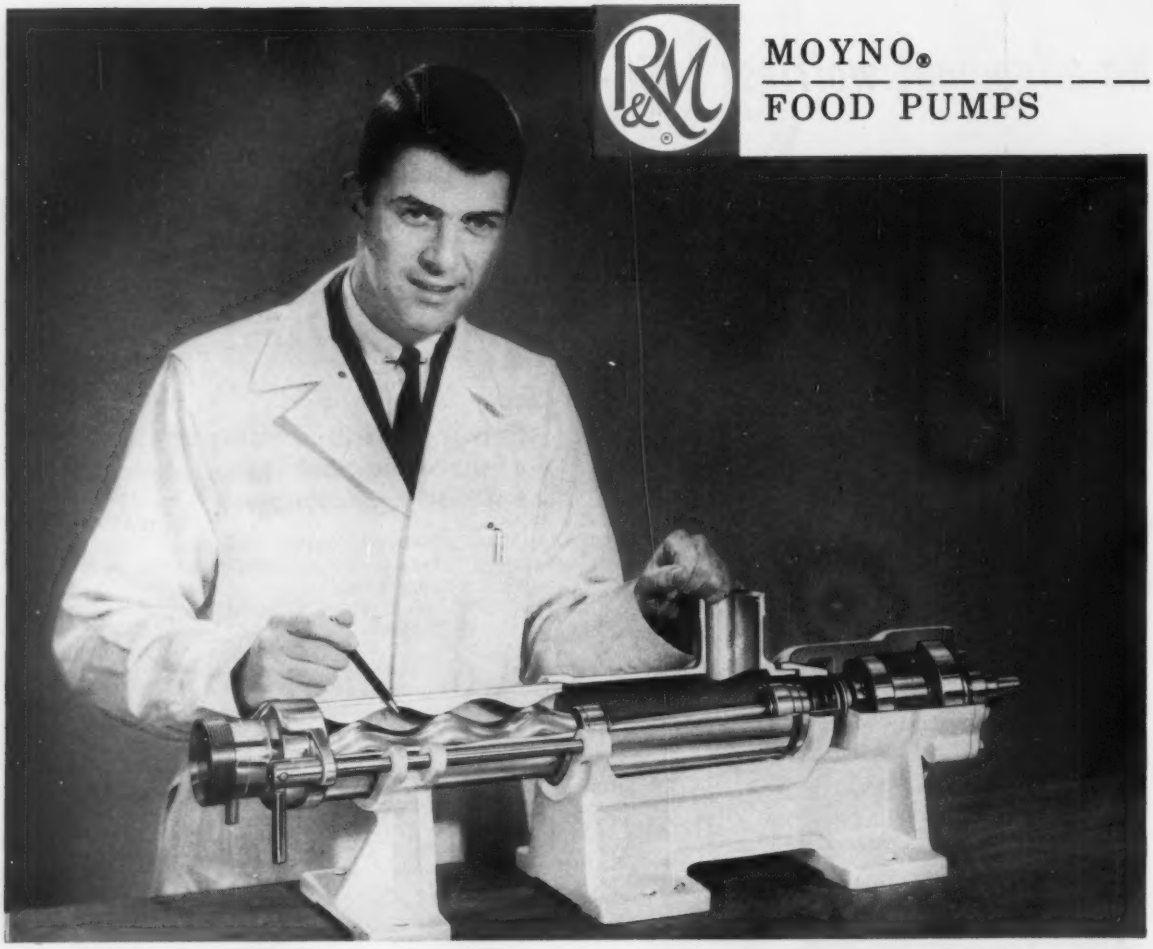
Link-Belt's complete bucket elevator line includes 14 types in 4 basic designs . . . centrifugal, positive, continuous and internal discharge. Also a wide variety of buckets . . . steel, malleable iron, Promal or alloy metals.

LINK-BELT

BUCKET ELEVATORS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Warehouses and District Sales Offices in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

MOYNO®
FOOD PUMPS

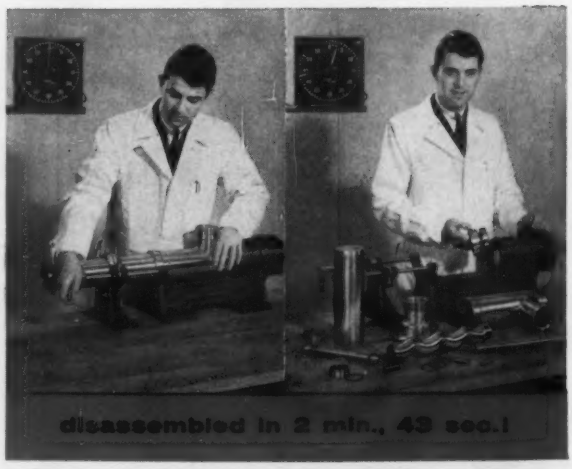


MOYNO®... *the "Quick-to-clean"* Food Pump that even *Pumps Suspended Solids!*

A MOYNO Food Pump can easily be disassembled in 2 minutes and 43 seconds for thorough, effective cleaning and be back on duty in minutes. MOYNOS eliminate long, costly cleanups that rob production time. Foods stay pure too, because MOYNO's smooth internal contours won't collect particles where bacteria might thrive, and bearing lubricant is completely isolated from pumping compartment to prevent contamination.

Any food product that will move through a pipe—from cider to lumpy potato salad—can be pumped with a MOYNO. The *"progressing cavity"* principle that distinguishes MOYNO from all other pumps explains this remarkable capability. The cutaway model above shows the screw-like, reversible rotor that revolves in a double-threaded stator to create these progressing cavities. Material flows smoothly and uniformly, without pulsation, aeration, agitation or disintegration. All wettable parts are stainless steel—or stator may also be synthetic rubber, odorless bakelite or other material, depending on service requirements. If needed, off-the-shelf replacement parts are always immediately available.

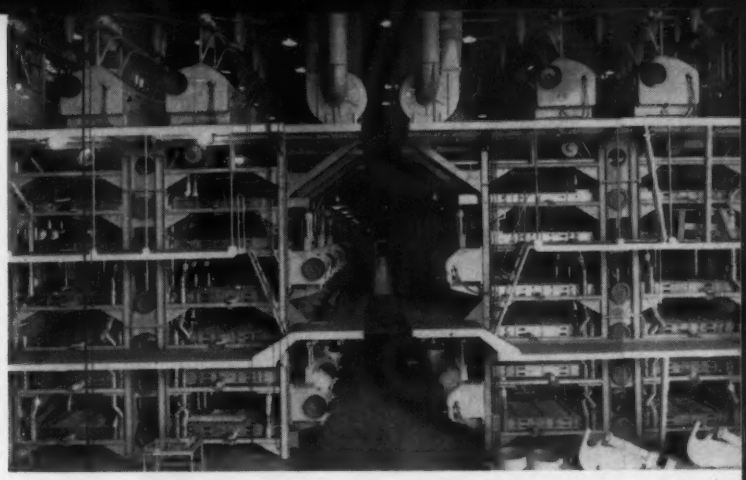
To chop cleaning costs and keep *all* foods moving through your plant, learn more about MOYNO by writing today for Bulletin 34 FE



ROBBINS & MYERS, INC.

motors, household fans, Propellair industrial fans, hoists, Moyno industrial pumps

SPRINGFIELD, OHIO • BRANTFORD, ONTARIO



IN ADVANCED MILL, compact classifiers replace bulky sifters and purifiers. Stacking of milling units enables simple, efficient processing and saves space.

GM's "Bellera"

Ups Milling Efficiency, Flour Quality

Unique direct flow minimizes processing steps and repetitive handling in space-saving system

HAILED by General Mills as the most important milling development in 50 years is their patented Bellera "Air Spun" process.

Its radically new direct-flow concept drastically cuts repetitive handling of stocks, also the multitude of processing steps formerly required. Moreover, the new techniques save space. A conventional mill of the same capacity is 28% larger.

For the baker and ultimately, of course, the consumer, GM proudly points to these five quality-promoting factors:

1. Flour produced by this process gives superior baking performance, also has sparkling bright color and sheen.

2. Product uniformity is outstanding, and it can be matched to today's automated baking equipment and processes.

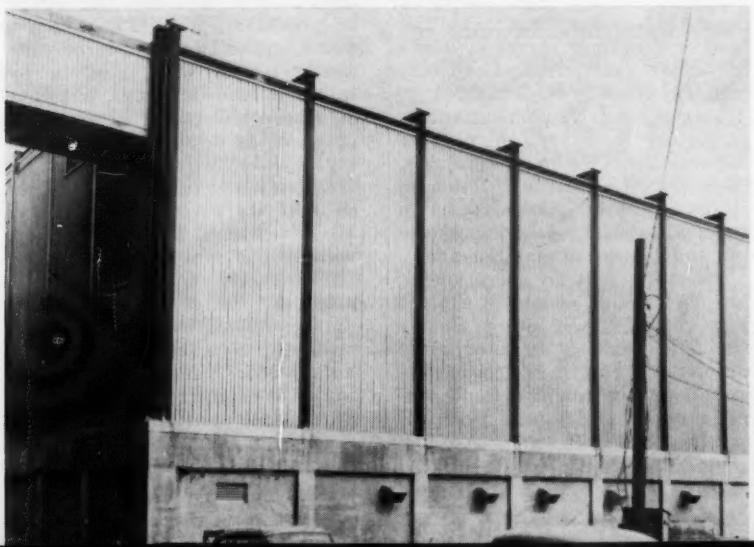
3. Extreme flexibility enables "tailoring" of specific flours, and aids in solving baker's special problems.

4. Sanitation is assured by the inherent simplicity of the process and its extensive use of pneumatic conveying.

5. In poor crop years, the miller can more readily compensate for nature's failures and produce top-quality flours.

Bellera mills will operate in Buffalo (14,000 cwt./day), Minneapolis (6,000 cwt./day), and Des Moines (6,000 cwt./day combined with Avon operation). Special single-roller mills were engineered and produced by Buhler Bros., Switzerland.

STRIKING APPEARANCE of Buffalo mill exterior is provided by stainless steel panels recessed between columns. Accenting sanitation, interior walls resemble solid sheets of metal with no flour-trapping recesses or crevices.



No Wasted Motion

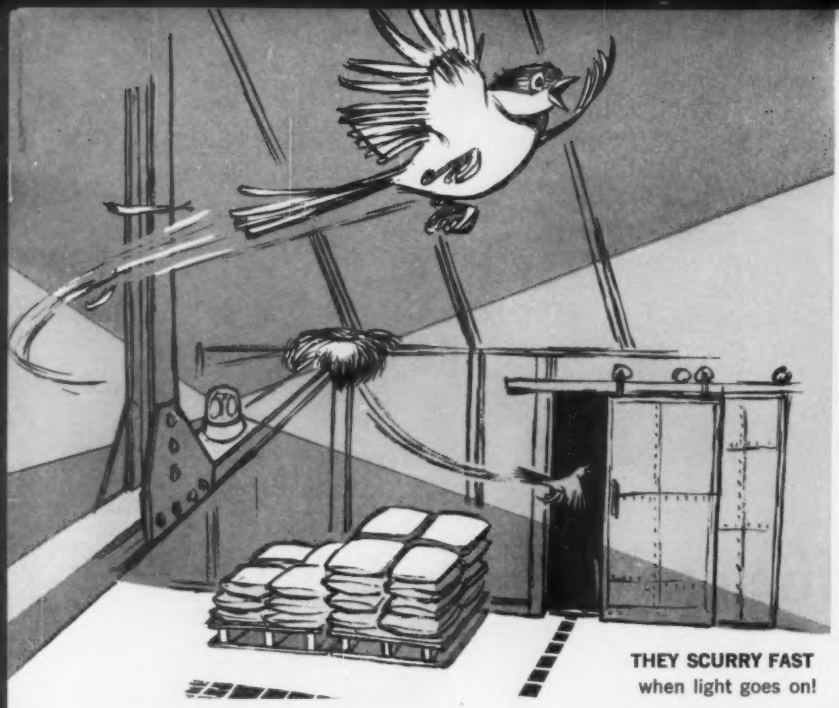
In streamlining the milling process, Bellera goes well beyond recent advanced techniques that improve the product only after the actual milling has been performed.

Until now, milling of wheat required a series of grinding operations alternated with sifting and purifying. Wheat and various stocks flowed downward in a multi-story mill through grinding and separating units. And repeatedly, streams have been sent back to the top for reprocessing.

In contrast, GM arranges processing steps and equipment so that wheat and mill stocks flow with a minimum of handling.

Significantly, conventional sifters and purifiers have been replaced by compact classifiers. They make possible a "stacked mill" in which equipment is placed in sequence. Thus, wheat starts at top of mill and is processed as it flows downward.

Bellera equipment is relatively easy to install and simple to operate. Sight-swift indicators and pushbutton controls increase milling ease and accuracy. (End)



THEY SCURRY FAST when light goes on!

Routs Birds, Keeps Them Out

Rotating ceiling light fights tough sanitation hazard by clearing roosting birds from food plants and warehouses

BIRDS can be successfully routed from nesting places in processing plants and warehouses by using rotating amber or yellow lights.

Kept in continuous operation, lights will prevent their return and keep sanitation-conscious plant management free from worry.

When seeking shelter and nesting facilities, birds tend to congregate and roost on overhead beams and horizontal ledges of roof structures. Nests are built just under the eaves, particularly at the wall-ceiling juncture.

In food processing, this can present several hazards. Goods stored below may be contaminated with excreta, urine, feathers, etc. Additionally, dead bird carcasses may bring Dermestid insects, mites, etc., into the plant.

Further, it can result in strict regulatory action when: (1) The food or container shows evidence of actual contamination, or (2) obviously *could* be contaminated.

To the sanitation consultant or regulatory inspector, chirping of roosting birds, or more seriously, their excreta, feathers, etc., on stored food products, serves as an *index* of generally poor housekeeping and sanitation maintenance.

Reason is that an operation allowing birds to remain in a plant must be guilty of other similar sanitation laxities. In short, birds in any type of food processing and handling establishment simply cannot be tolerated!

T. H. HUGE'
President, The Huge' Co., Inc., St. Louis

Admittedly, it is difficult to keep birds out altogether since doorways frequently remain open due to traffic, although several approaches have been tried.

How to Do It

Thin chains are often hung down over the doorway in such a way that they do not interfere with the regular passage of men and goods. Jets of air have been fairly successful and, when properly installed, can also be effective in keeping out flying insects. Another method is to make roosting surfaces uncomfortable by permanently installing porcupine-like metal projections or chemical glue-like barriers.

Many plants rely on personnel actually shooting the birds, but this has a tendency to develop into as much of a sport as a true sanitation control measure. And there still remains the problem of bird carcasses attracting vermin and rodents. Recorded sounds, horns, and similar disturbances have also been tried with varying degrees of success. Trapping is still another technique which is seldom completely effective.

Lights "Do the Trick"

As part of our company's sanitation consulting services, we have investigated various means of eliminating this bird problem.

One excellent way to discourage bird roosting is the permanent installation in overhead central locations of constantly rotating amber or yellow lights. Lights flash beams about the wall-ceiling juncture and over the roof where birds are roosting. Rays irritate the not-so-friendly feathered creatures and actually frighten them away permanently.

In some large warehouses, two, three, six or a dozen lights may be necessary, but in an average plant, one or two seem to be sufficient. Lights work best in totally enclosed buildings, but have also been successful in open, exposed docks or sheds with no siding.

Objective is to install the light so that its revolving beam will hit all corners, preferably at the wall-ceiling juncture.

Two types of lights are available. A smaller unit, protecting an area about 100 ft. square when centrally installed, costs approximately $65. A larger light, covering or sweeping an area about 150 ft. square, sells for around $85.

We have experimented with different type lenses or colors and find that only amber or yellow are effective. White or green beams do not seem to irritate the birds and are ineffective.

Adult birds usually leave the nests and roosting area after the installation is initially turned on. They will even abandon their young rather than remain in the same building with the light. On some occasions, where young birds were in nests, however, adults have re-entered to assist their offspring in leaving, and even remain to protect them.

Therefore, we have found it essential to remove all nests and destroy the fledglings when the lights are first turned on.

There have even been instances where the young grew up under the lights and became accustomed to them. In this case, it becomes necessary to destroy them by shooting, trapping, or some other means.

There are examples of heavy bird populations immediately outside a plant roosting on wires, trees, etc, who simply will not enter a building containing the rotating, flashing lights. If the lights are turned off for any period, the birds will frequently return to the building, but even then can be chased away by simply turning the lights on again.

As a precaution, it is wise to alert the local fire department since the yellow light rotating inside a building can give an illusion (from the outside) that the interior is on fire.

Against pigeons these lights are not always effective. There seems to be a tendency for these birds to find protection behind girders or some obstruction over which the light passes. This causes them to congregate in a few protected spots. However, once congregated they are easier to destroy.

Starlings and sparrows are much more active than pigeons, changing their resting place frequently and flying about. Thus they are exposed more to the light, enabling it to be completely effective against these smaller bird pests.

Needless to say, birds should be repelled from buildings by mechanical means such as screened openings under the roof and other ingress points where they might enter. Similar precautionary techniques in conjunction with the lights can prove very effective.

—End

CUT CAPPING COSTS WITH CAPEM

PFEIFFER FOOD PRODUCTS, INC. recently installed this new mayonnaise and salad dressing line in their Buffalo, N. Y. plant. They chose a CaPeM, Model C-4-F for the capping operation.

This capper applies 7200 caps per hour and handles jar sizes from 6 oz. to quarts. It incorporates a special Consolidated chuck-arresting device which prevents the chuck from dropping over the jar if no cap is present. No mayonnaise ever gets on the chuck.

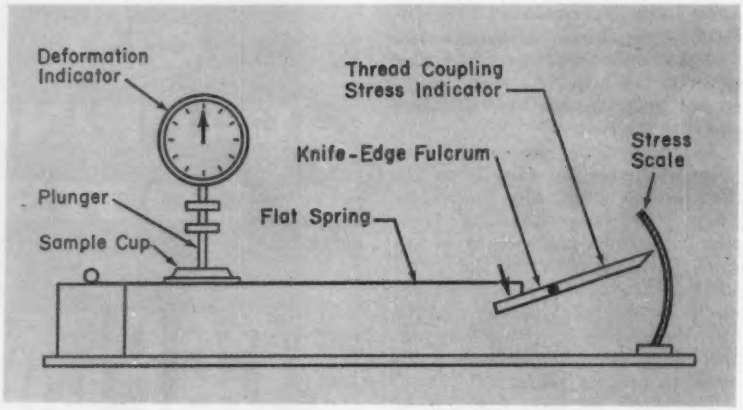
There are more CaPeM Screw Cappers in use than any other make. Users select them because they combine low initial cost, low operating cost, and a minimum of maintenance.

CaPeM applies any standard cap or cover and many special types at speeds ranging from 2,000 to 10,000 per hour. It handles bottles, jars, cans or jugs of any size or shape. It delivers a perfect LEAKPROOF seal.

For recommendations on improving your own capping operation, write Sales Manager, Consolidated Packaging Machinery Corp., 1400 West Avenue, Buffalo 13, N.Y.

A Subsidiary of International Paper Company

CAPEM → THE MODERN SCREW CAPPER



NEW STRESS - RELAXATION UNIT gages Consistency of caramel, starch candies, and marshmallow. With recorder (not shown) it gives continuous plot of product consistency during production.

Action on Quality and Sanitation

Latest ingredient data, advanced production-control techniques, new-product evaluation, and sanitary equipment design spotlighted at recent confectioners' meeting

WHAT STRIDES have confectioners made with ingredients and test methods in quantity production of high-quality candies? . . . And what are the prospects for new confections and equipment with more built-in sanitary features?

These were salient questions spotlighted by experts at the recent annual meeting of the Pennsylvania Manufacturing Confectioners' Assn. Production Conference at Lancaster, Pa.

Low-Conversion Corn Syrup

Because of the lower reducing-sugar content of low conversion syrup, hard candy made with it picks up less moisture at higher humidities, reported J. A. Kooreman, Penick & Ford, Ltd., Cedar Rapids, Ia.

This extra protection against moisture - induced deterioration suggests the possibility of safely storing and shipping such goods under less rigidly controlled atmospheres. However, high syrup-to-sugar ratios must be avoided or surface changes (like graining) result even with ideal storage conditions.

New Egg Uses

Suggested by H. Knechtel, Knechtel Labs., Chicago, were several ways of making novel confections.

Chocolate-coated candy can be made from a highly flavored meringue. This aerated item contains much less than half the calories of a similar piece of conventional candy.

Another suggestion is variously flavored custard-type creams made with egg yolk. Latter imparts a tender stand-up quality seemingly impossible to achieve by other means. This type of center is readily extruded and cut, also holds its shape during pre-bottoming and enrobing. This eliminates need for a skinning tunnel or use of undesirable jellying agents.

Texture of fondant cooked with 2½% of powdered yolk is different from conventional fondants, color is pale yellow, and moisture content is some 19% higher. It is short and readily moldable into various shapes and sizes.

Bean Quality and Chocolate

D. C. Mitchell, General Foods Corp., Dorchester, Mass., pointed out that ultimate control of cocoa-bean quality rests with the chocolate manufacturer.

Of the five major flavor defects —bitterness, astringency, hamminess, lack of characteristic flavor, and mustiness—the first two can be controlled by proper processing. Hammy flavors are almost impossible to mask or destroy in either sweet chocolate, chocolate liquor, or cocoa powder.

Lack of characteristic flavor (lost probably through improper fermentation) is a problem without immediate solution. If a particular type of bean doesn't have its usual identifying flavor, no known process will impart it.

Moisture content of beans (normally 6-7%) may vary considerably. However, if excess moisture doesn't result in moldy or musty flavors, the loss is principally an economic one.

There's need for better correlation of bean quality with such factors as titratable acidity, water-soluble tannins, and total volatiles. Bean-liquor pH appears to be a fair index of degree of fermentation. Advanced techniques in gas chromatography should enable evaluation of beans for flavor qualities that can be related to quality of finished goods.

Marshmallow Consistency

W. N. Duck, Franklin & Marshall College, Lancaster, Pa., reported on a stress relaxation-measuring unit adapted for determining consistency of caramel, starch

candies, and marshmallows. This instrument also shows promise for studies of viscosity, moisture content, gelatin-swelling time, and air-bubble size.

Unit (see drawing) consists of a flat steel spring anchored at one end. In testing, sample's placed on the spring and then deformed by a plunger. Amount the spring's depressed is a measure of stress, which is pointer-indicated on a scale.

Elasticity appears to be the prime factor in evaluating marshmallow. Initial stress is the principal measure of elasticity, and it also indicates degree of crosslinking that occurs when gelatin sets.

Tests showed that, without dextrose, stress increases rapidly over a 24-hr. period when the gel is deformed. This implies a rapid rate of increase in crosslinking of gelatin molecules. There's also an abrupt change to a slower rate of increase in crosslinking that continues for some days.

It would appear desirable, therefore, to have a marshmallow set up to a definite tender consistency at the fastest possible rate to assure fast, low-cost production. Dextrose apparently controls toughening without affecting the setting up of the gel.

This testing should be useful in quality control during production because it assigns numerical values to the most important aspects of candy consistency. Combined with a recorder, the instrument would provide in-process control and a means for testing goods in storage.

Gaging Fat Consistency

Reported by E. Hanssen, H. Bahlsens Keksfabrik K. G., Hanover, Germany, was a new method for microscopically determining the consistency of fats discharged from coolers.

The sample is smeared on a glass slide and observed with a temperature-controlled (23-24 C.) microscope under polarized light. Fat crystals show up as lighted small or large needles, while liquid fat and incorporated air appear black. To distinguish air from uncrystallized fat, the polarizer is switched off and the sample observed under normal light. Air bubbles are surrounded with wide black rings.

Test serves as a check that cooled fat's crystals are small—a prerequisite for uniform melting on the tongue. Also indicated are two types of fat structure. The first comprises single crystals or small conglomerates, both embedded in the liquid-fat phase. Such a fat is best suited for incorporating air, as required for cream fillings or for other baking purposes.

The other formation is a network of crystals. This type of fat, while very tough, is ideal for puff pastries. In production, it must be cooled, heated, and then recooled in a triple-head Votator-type heat-exchanger.

New Products

Confections should compete with other foods on a nutritional basis, rather than on taste appeal alone, according to K. S. Konigsbacher, Evans Research & Development Corp., N.Y.C.

When appropriate, they should be fortified with vitamins, minerals, and food-supplement concentrates. Candy bars might have flavored food supplements as centers, or an enriched nougat. And fortified candy could become an important geriatric food, if made easy to chew and flavorful.

In seeking new items, processors should first consider modifying flavor and color of existing products. This has been successful in the ice-cream field. Packaging should make greater use of transparent plastics and there should be more "zippered" and "pop-open" packages for more convenient opening.

The trained sensory panel is an excellent tool for evaluating new products for which standards exist. The most sensitive techniques available are difference tests, such as triangle and the duo-trio tests. Flavor-profile techniques permit qualitative and quantitative evaluation of each characteristic which, when combined, give an overall impression.

Unfortunately, or perhaps fortunately, we do not always have a standard that can be used as the control. Who will then decide what is good and what is not? Consumer studies generally are the best technique, but they are expensive and number of samples that can be evaluated is very limited.

To fill the gap between sensory panel studies and consumer studies we, at Evans Research, have established a pilot consumer panel composed of 20 members. They are former home economists who are now full-time homemakers, and conduct objective evaluations under actual home-use conditions.

After a product has been judged acceptable to the consumer, it is of prime importance to minimize variations. There have been indications from FDA that food companies will be required to set up control laboratories. This would mean testing not only of raw materials but of finished products for overall quality and trace amount of possible contaminants.

Fortunately, new instrumental methods simplify quality control, and enable determination of even very minor constituents. For flavor control, the most important of the recently-developed tools is the highly sensitive gas chromatograph that uses an ionization-detection system. Sensitivity is such that vapor samples can be used and low ppm. levels detected.

Radio-isotopes and activation techniques detect traces of one part in ten million. FDA considers this method suitable for measuring the migration of minute extraneous materials into foods.

Sanitary Machines

A. E. Abrahamson, Dept. of Health, N. Y. C., reported that much confectionery equipment is not of sufficiently sanitary design.

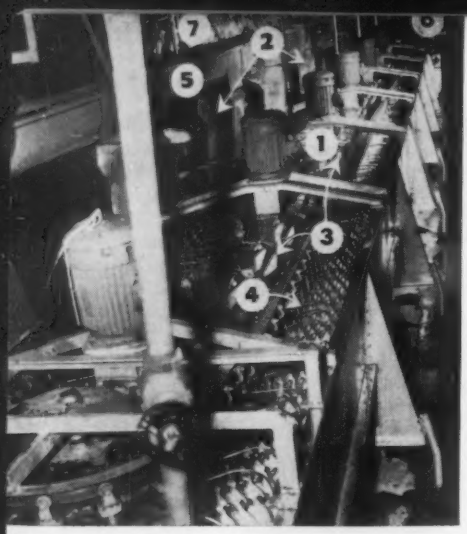
There is great need for simpler design of chocolate enrobers and melters, fondant machines, depositors, cooling tunnels, starch-goods units, and special hard-candy equipment. Yet there are no established sanitary standards for designing these units.

Confectioners need a committee to evaluate, with qualified sanitation consultants, sanitary aspects of existing equipment and to prepare standards.

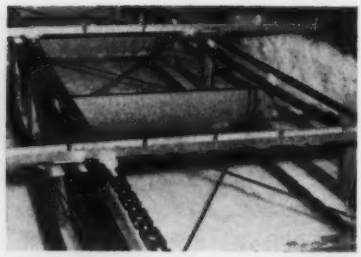
Such groups have been successfully established in other food branches, and this action, if carried out effectively, would obviate need for governmental control.

Confectioners should now find the going easier because much equipment in common use by various food processors has been built to sanitary standards. For example, bakers are concluding standards for sanitary handlers of bulk liquid sweeteners.

However, there still remains the writing of standards for equipment unique to the candy field, which will require careful evaluation of sanitary aspects of each type of machine. (FE Staff)



◀25,000 BIRDS A DAY are uniformly chilled at 35-36F. in this top-efficient unit. Pumps (1) bring water to turbulence, circulate it through ice in hoppers (2), reducing its temperature to 32F. Chilled water is impelled into ducts (3), which spray it over ranks of birds (4) moving through unit 8 to a shackle. Scroll-conveyor (5) feeds ice to hoppers to maintain continuous-chilling operation. Just prior to this stage, poultry has traveled through prechiller (6). Next stage is ice-packing station (7).



ICE RAKE (electro-mechanical) plows cracked ice from bin to open gates (rear). It then moves by scroll-conveyor to chill-tank hoppers. Bin holds 40 tons of ice.

Automatic Chiller Sets Pace

Packer's new Turlock, Calif., poultry-processing facility also chalks up superior bird-handling performance with special flexible conveyors that 'synchromesh' feed-in of fowl . . . Included is revolutionary offal-and-feathers disposal system

BOOMING consumer demand and a squeeze-play that finds the poultry processor in the middle—between low retail prices and the need to keep producers economically healthy—have greatly accelerated the mechanization of poultry processes.

Armour and Co.'s new Turlock, Calif., poultry plant is an outstanding example of this continuing progress. Its present capacity is 500,000 lb. of poultry a day.

But, the company engineers, who planned and constructed it with a built-in flexibility, say that the production of this 68,000 sq. ft. plant can be doubled with only a few engineering changes.

In fact, a number of such changes already are in work, even though the facility only recently went on-stream.

Among the many notable advances scored in the design of this new plant, the most impressive is the new semi-automatic poultry chilling.

Operated by pushbutton, this system makes obsolete the old timetaking manual loading/unloading of 250 birds, ice, and water in small tanks. Because it incorporates its own ice-making units, it reduces significantly the former cost and handling of ice. It also cuts manhours and plant space required. And it eliminates the need of compressed air and attendant pipe systems that served the tank method.

Moreover, it positively assures uniform chilling, reducing the temperature of freshly processed birds to 35-36F.

Made by the Mueller Mfg. Co., Springfield, Mo., the unit has a present capacity of 25,000 chickens a day. It comprises two tanks —a pre-chill tank (10 ft. long) and a chill tank (40 ft. long)— through which an endless shackle conveyor moves birds partly immersed and under continuous sprays of near 32F. water.

Shackles, each holding eight birds, are arranged at 6-in. centers on the conveyor. Latter moves at 2½ fpm., providing a total time of 40 min. in which the birds are in direct contact with the water refrigerant. Chill tank holds about 1,300 birds.

New Hydrocooling Concept

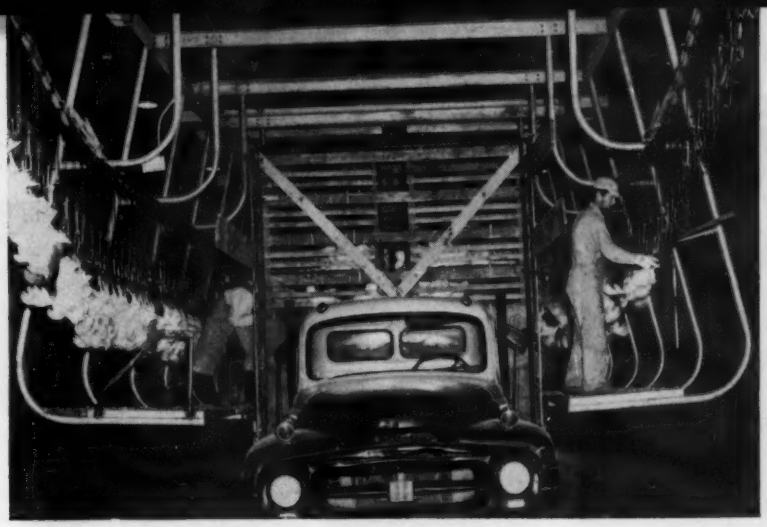
This self-contained system manufactures and conveys its own ice to the seven hoppers of the chill tank and to the two of the prechiller. Three 100-hp., 4-cylinder compressors supply refrigerant for two Krakice machines (Kohlenberger Engineering Co., Fullerton, Calif.). Each provides 40 tons of cracked-ice a day via scrolling conveyors feeding the ice bin.

With the previous method, which employed 150 tanks (3x4x2½ ft. deep), ice was purchased in blocks, mechanically crushed, then combined with water in the tanks. At the season's peak this required up to 100-110 tons of ice a day, at $5.50-$6.00 per ton.

In contrast, the Krakice units supply the system at only about 50% of the block-ice cost. In addition, the tanks had occupied some 1,200 sq. ft. of plant floor space, compared to less than 500 sq. ft. for the new chilling equipment.

The 60-ton capacity ice-bin, also designed by Kohlenberger, has a pushbutton system for operating an ice-rake and discharge gates for controlled deliveries. Employing hydraulic cylinders, the gates open automatically when the rake moves. A resistance meter actuates a motor that elevates or lowers the ice-rake carriage according to the resistance developed by

F E Staff



EMPTY-CASE CONVEYORS have been precisely designed and strategically installed to speed packing—for saving of 8 man-hours daily. Four roller conveyors (front) move cartons from mezzanine. Single one (rear) carries crates to ice-packing station.

In Advanced Armour Plant

the pressure of ice build-up against the raking surfaces. The control pushbutton is located adjacent to the chilling unit.

During normal operations, ice is manufactured at night after processing ends. The scroll conveyors deliver it through a chute at the discharge end of the bin. When charging the bin with ice, the rotation of the rake around its carriage is the reverse of the action when discharging ice. In this reverse cycle, the rake distributes and levels the ice in the bin.

An hour before processing operations begin, six tons of ice are scroll-conveyed to the pre-chiller and the chill tank to reduce water temperature to 32F. It is chuted into two hoppers at the pre-chiller and seven at the chill tank.

These hoppers, which are built into the stainless steel tanks, have three closed sides. The fourth side is screened and opens into the tank, directly adjacent to a pump. The impeller shaft and stainless casing of the pumps extend to within a few inches of the bottom of the tank.

The impeller creates a turbulence, forcing water to circulate through the ice. Resulting chilled water is pumped up through the casing to dispersion ducts. Here, the flow is divided into ducts at both sides of the pump. Running the full length of the tank, the ducts are slotted on both sides, to spray chilled water over the exposed portion of birds. The water then recirculates again through the ice. Additional ice is added, as needed, to maintain proper water temperature.

Faster Truck Unloading

The new dual system of work platforms is in decided contrast to the previous method, which utilized ladders, from which men unloaded birds, then handed them down to other men, who placed them on conveyor shackles.

Input, too, is now faster, more uniform with four men shackling chickens at 60/min. and turkeys at 30/min. Height of the new platforms is easily adjusted to the truck-tier of birds being worked.

Called "Ride-A-Track" (Dearborn Fabricating & Engineering Co., Detroit), the platforms are equipped with shackle cable-conveyors and may be raised or lowered like an elevator by pushbutton. The cable conveyor incorporates the special Dearborn "Limber-Dip," which is used to make the I-beam conveyor flexible.

Thus, as the platform raises or lowers, the Limber-Dip section bends to accommodate this height change. Its reciprocations, limited to vertical movement, are achieved by a two-dimensional ball-and-socket device. Sections are held together by a spring-loaded cable that retains the proper arc at all platform elevations.

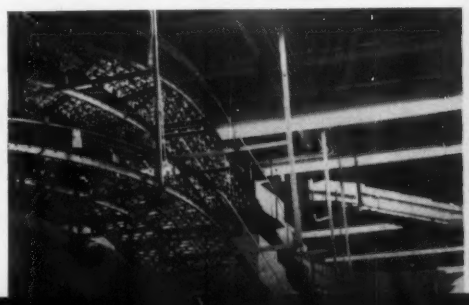
Sanitation Improved

An offal-and-feather disposal system of revolutionary design marks the new operation as most sanitary. All waste is hydro-conveyed to a separate room, which has its own truck drive-in facility.

Offal, except lungs, discharges into one large concrete sump, while feathers go into another. Lungs, which are removed by vacuum, travel in a separate pipeline to the vacuum tank. The latter is unloaded two or three times a day, its contents being used as feed for mink.

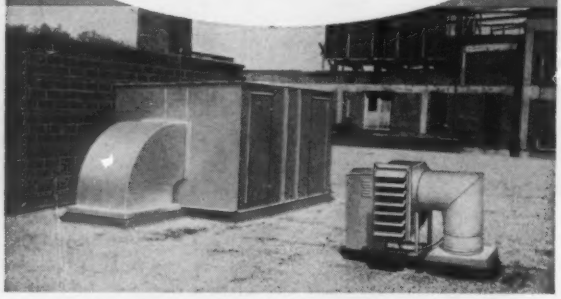
Until truck-loads are accumulated, sumps act as storage for offal and feathers. Each sump has its own unloading system. These waste materials are pumped from the sumps to overhead de-watering reels, which discharge into trucks spotted beneath them.

(End)

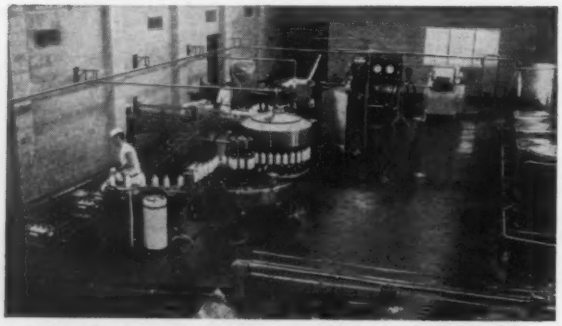


ELEVATOR PLATFORMS, incorporated with "Ride-A-Track" conveyor, speed unloading of poultry from truck. They're readily lifted or lowered to position shackle-men directly at truck-tier being worked. Four men unload 3,600 chickens or 1,800 turkeys an hour.

KLIMATIC KING
Solves Air Problems at Flynn Dairy



Klimatic King units and King utility blowers are installed on the roof at Flynn Dairy Plant, Des Moines, Iowa.



Fresh air supply grills are seen along one wall of the milk processing room.

- **No more Excess Humidity**
- **Odors Eliminated**
- **Never a Dust Problem**
- **Continuous Air Circulation**
- **Maintain Constant Temperatures**

Flynn Dairy of Des Moines, Iowa has installed Klimatic King heating and ventilating units which are especially engineered for dairy and food processing applications.

Standard units are fabricated with galvanized steel cabinets and insulated to eliminate condensation and dripping . . . have automatic temperature and ventilating controls. Units have two speed motors for "high" and "low" production periods . . . means operating economy. Klimatic King . . . the quality leader in its field . . . can be used for cooling as well with the simple addition of a cooling coil. Available in sizes 3,500 to 20,000 CFM.

Write today for detailed bulletin. More than fifty years experience at your disposal.

KLIMATIC KING — King COMPANY OF OWATONNA

905 North Cedar Street, Owatonna, Minn.

Sharp Freeze, Cooling, Ventilating and Heating Systems

MEN & COMPANIES

William T. Brady

CP Executive Shuffle . . . **William T. Brady** moves up from president to board chairman and chief executive officer of **Corn Products Co.** and **John R. Rhamstine,** former executive v.-p., takes over as president.

Mr. Brady has been associated with firm since 1919. **Mr. Rhamstine** was with Swift & Co. and Charles E. Bedeux Co. before joining CP in 1934.

In other areas, **Walter A. Moore, Edmund F. Stefenson** and **John M. Volkhardt** are appointed marketing directors and v.-p.'s at Best Foods Div. of CP Sales Co. Trio of posts were created in attempt to consolidate marketing activities for consumer products.

V.-P. J. Mark Coe takes over national sales managership of same division. **Albert Brown** continues as advertising v.-p. for CP Sales, but will take on added responsibilities in home service department, production services, and market research.

Corn Products is one of the world's leading producers of food and industrial products with annual sales amounting to over $600 million.

John R. Rhamstine

A. Krieger, Jr.

"Sociables" Boost Krieger . . . Given supervision over all departments in new post as Pepsi-Cola Co. administrative v.-p. is **Adolph Krieger, Jr.,** former controller.

Mr. Krieger joined PC in '48 and has held posts as assistant controller and assistant treasurer.

In other PC news—senior manufacturing v.-p. **Thomas Elmezzi** gets board seat. Las Vegas operation becomes 22nd company-owned U.S. plant; and 12% increase in net earnings over 6-mo. period is announced.

Personnel

Edward W. Beardsley has been appointed southern regional v.-p. of the Industrial Div., Corn Products Sales.

Thomas M. Crosby is now General Mills board member.

Alfred H. Funke, Jr., former director and manufacturing v.p. of P. J. Ritter Co., takes over general managership of Ritter Div. **Glenn E. Knaub** moves up to same post in Brooks Div.

E. Burke Giblin and **Arthur E. Larkin, Jr.,** are newly elected v.-p.'s at General Foods. **Ray Harrow** is new traffic director.

R. Burt Gookin, finance v.-p. at H. J. Heinz, has been elected v.-p. of the Controllers Institute Research Foundation.

Clyde H. Hendrix, former v.-p. of Pillsbury Mills, has been named chairman of food procurement for Project HOPE.

Dr. John H. Hopper and **Dr. Roger E. Conant** have been added to food research staff at Kelloggs.

Ernest B. Hueter, former director of advertising, is now director of both bread sales and advertising at Interstate Bakeries.

Robert T. James has been appointed director of personnel at the Kitchens of Sara Lee. **Mrs. Cleo M. Cottrell** fills new post as director of home economics.

Harold G. Kazanjian has resigned as executive v.-p. and advertising manager of Peter Paul, Inc., following 28-yr. service.

Bruce M. Kinsey has been appointed marketing research manager of the Glidden Co.'s Durkee Famous Foods Div.

Wm. F. Massmann is new R&D v.-p. at Dr. Pepper Co.

Howard J. Morgens, Procter & Gamble president, will deliver keynote address at National Industrial Conference Board's eighth annual marketing conference.

John A. Mortimer is new marketing manager of NBC's Bread Div.

Dr. Clarence H. Pals has been named new director of the Meat Inspection Div., USDA.

Bernard H. Semler, former executive v.-p. of Freeman Shoe Corp., will assume finance v.-p. post with Hunt Foods at Fullerton, Calif.

Bill R. Terrill and **Delbert Thornley** move up to positions of managers respectively of Beatrice Foods Co.'s Idaho Creameries Div. plants at Boise and Pocatello.

Industry

American Molasses has reported acquisition of all outstanding capital stock of Lanco Products Corp. and its subsidiary, American Breddo Corp.

Anheuser-Busch settled a government antitrust suit by agreeing not to acquire an interest in any domestic brewery during the next five years without court approval.

Armour will build a beef and lamb production plant in Twin Falls, Idaho.

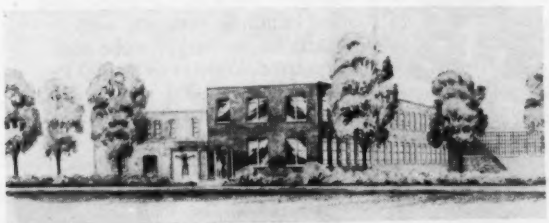
California Packing Corp. has formed a new Venezuelan subsidiary, Companía Venezolana de Conserves, C.A.

Consolidated Foods streamlined its Ohio wholesale distribution operations by merging Monarch Finer Foods, Canton, with the Akron CF branch. At same time Denver area is tightened with merger of Mory Mercantile unit into Monarch Foods Div.

Farmers Union Grain Terminal Assoc. has purchased a large soybean processing plant at Mankato, Minn., from Honeymead Products Co. for reported $6 million.

Gentry, division of **Consolidated Foods**, has moved general administrative offices and central lab to Glendale, Calif.

International Flavors & Fragrances has announced



CONSTRUCTION'S BEGUN on new 14,000 sq. ft. R&D labs of Wm. Underwood Co., Watertown, Mass. canner. Expected to cost over $200,000, extension of present facilities will also include additional offices, enlarged machine shop and expanded warehouse operations.

too much vinegar...

spoils a salad ...and endangers a fine product's reputation

That's why makers of fine vinegars use WS snap-on liquid dispensers.

If proper dispensing is important to your product's acceptance, WS liquid dispenser fitments may be the perfect answer. Check with your WS salesman.

Check up on WS pouring rings, sifter tops, and custom-molded caps, too.

Write us or phone collect for full information or immediate service.

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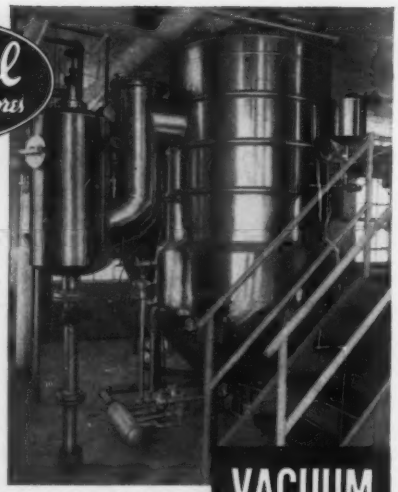
Jewel Food Stores

preserves all nature's goodness and flavor with their



VACUUM FRUIT SPREAD COOKER

Mojonnier
QUALITY ENGINEERED FOR ECONOMY

Jewel Tea Co., Barrington, Illinois who wouldn't part with their Mojonnier Fruit Spread Cooker, is one of the nation's largest producers of fine jellies, jams and other fast-selling fruit spreads.

Their **Mojonnier-designed Vacuum Cooker** is the major reason behind improved flavor, product uniformity and lower production costs.

For all the facts promptly, write:
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CIRCLE 1 ON READER SERVICE CARD

proposed expansion and consolidation of its Teterboro, N. J., plant.

International Minerals & Chemical reports a 25% boost in Ac'cent production capacity with expansion of San Jose plant.

Gorman Eckert & Co., Ltd., Ontario, will introduce, produce and merchandise the complete McCormick Gourmet Spice Line in Canada.

Morningstar-Paisley is constructing a million dollar potato processing plant in Houlton, Me.

Associated Industries

Crompton & Knowles Packaging has purchased land near Springfield, Ill., for increasing its manufacturing, engineering and development space.

Dragoco, Inc., N.Y.C. flavor manufacturer, has a new president, Dr. Henry G. Gribou.

National Can Corp. started construction of a new can manufacturing plant in Edison Twp., N. J.

Sprout, Waldron & Co. have switched testing labs to a new four-story building in Muncy, Pa.

H. Kohnstamm & Co., Inc., has joined with Horace Cory Co., Ltd., to manufacture and sell Kohnstamm-labeled dyestuffs and pigment colors throughout Commonwealth and "outer-seven" trading areas. Under agreement, HK & Co. will have an interest in the London-based pigment producer.

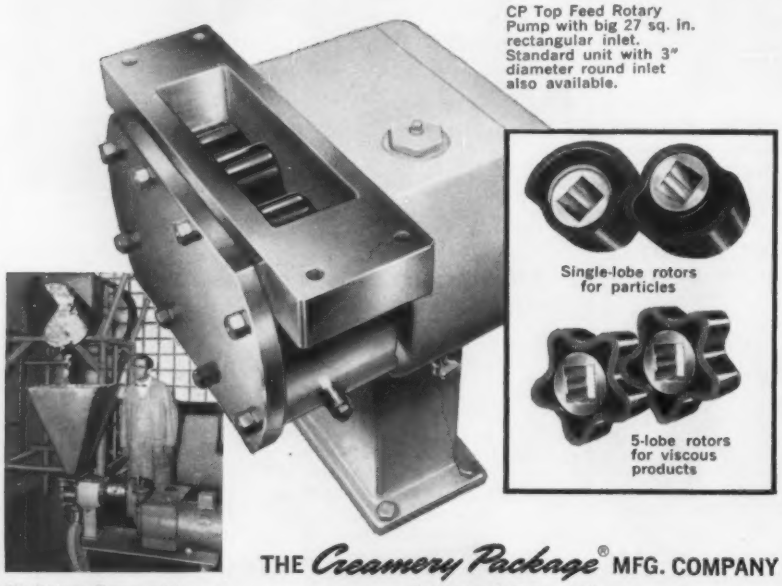
Armstrong Cork Co. has completed a modernization project at its Dunkirk, Ind., glass container plant.

Deaths

Albert P. Strietmann, 86, v.-p. and member of the board, Biscuit & Cracker Manufacturer's Assn.

James B. Cann, 58, executive v.-p. and director of sales, ReaLemon-Puritan Co.

NEW CP® TOP FEED ROTARY PUMPS
with exclusive resilient rotors
for viscous product handling



CP Top Feed Rotary Pump with big 27 sq. in. rectangular inlet. Standard unit with 3" diameter round inlet also available.

Single-lobe rotors for particles

5-lobe rotors for viscous products

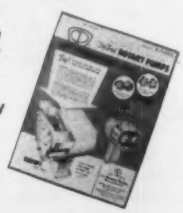
CP Rotary Pump with rectangular inlet in service at a meat packing plant. Rectangular inlet has flange tapped to receive hopper.

★ SANITARY
★ POSITIVE
★ STAINLESS

New No. 6 CP Top Feed Rotary Pumps easily handle viscous products such as potato salad, cookie dough, meat emulsions, pie fillings, etc.

Exclusive CP resilient rotors are either CP 5-lobe for viscous fluids or CP single-lobe for handling products with particles up to ¾" cube size. Pumps deliver up to 50,000 lbs. per hour at 1000 psi at temperatures to 220°F.

NEW ILLUSTRATED BOOKLET gives details, engineering specifications, performance data on CP Top Feed Rotary Pumps. Write for your free copy of Bulletin A-1-525 today.



THE Creamery Package® MFG. COMPANY
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Fashions change...

but color is always essential!

No single factor is more important to the visual appeal of foods and beverages.

To make foods more colorfully attractive, we have worked with the food processing industry for more than a half century. Confidently, we expect to continue in the future to meet your requirements for standardized, pure food colors that will produce the shades you want, well within the defined limits of safe use.

Our Research and Engineering Center and conveniently located customer-service laboratories work constantly to improve the quality and variety of our comprehensive range of certified food colors and to apply them efficiently to the individual needs of our customers.

So, when you want to add color to new products or reformulate established shades, it always pays to call National Aniline first.

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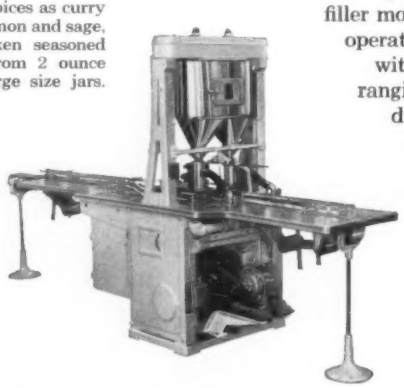
Allied Chemical

FMC Auger Fillers are "quick change" performers for Spice Islands

Spice Islands Company, world famous San Francisco packer of exotic spices and seasonings, selected FMC Auger Fillers to meet rigid requirements. They needed accuracy and speed. But just as important they had to have quick changeover in packaging a wide range of sizes and products of varying characteristics. Fully automatic and semi-automatic fillers handle with equal facility such spices as curry and garlic powders, ground cinnamon and sage, hickory smoked salt, and chicken seasoned stock base. Containers range from 2 ounce "apothecary" to regular and large size jars.

The Duplex Auger Filler model HG-84 shown here is one of several units installed at Spice Islands. Completely automatic, it is available with a choice of filling methods—cam volumetric, gross weighing or auger combined with vacuum for packing dusty products—at speeds up to 70 packages per minute. Many other auger filler models for automatic or semi-automatic operation are designed to handle products with "difficult" characteristics at speeds ranging up to 140 units per minute. Production run accuracy is outstanding in filling cans, jars, cartons or other containers. Size and product changeover is exceptionally fast and simple for powders, granules and certain paste products.



Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
FMC Packaging Machinery Division
Stokes & Smith Plant
4914 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

For the whole story of how FMC Auger Fillers can improve your packaging, write for your copy of Bulletin P-811.

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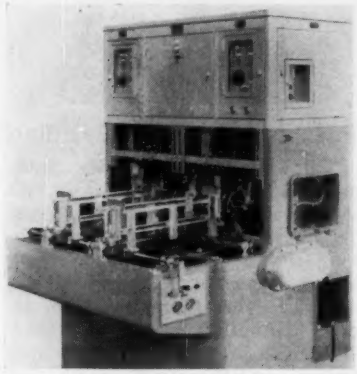
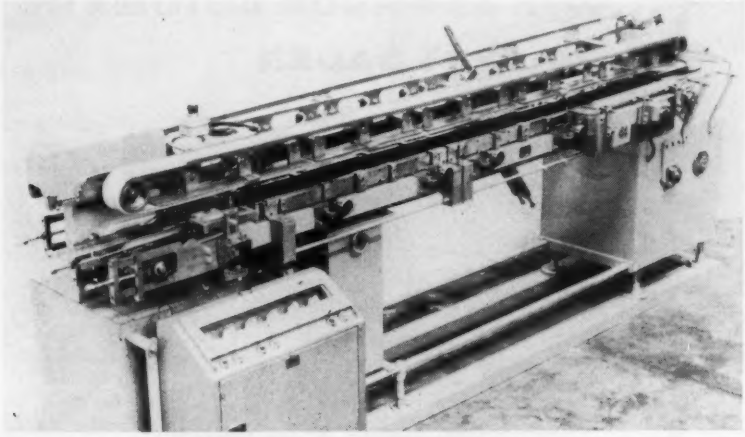
NEW EQUIPMENT & SUPPLIES



CARTON SETUP MACHINE forms new rigid box in simple automatic operation. Sealing areas on blank are heated, blank is formed by punch, and pressure-sealed. Ejection suckers pull formed carton from bottom of die and place it on timed delivery chain. Forming speed, to 60 cartons/min., is adjusted by hand-wheel.



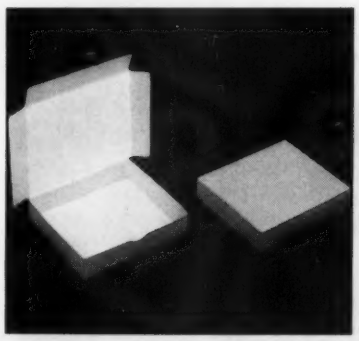
CLOSING, SEALING UNIT is fully automatic U-shaped conveyor with heating and cooling sections along each lane. In operation, lid and side flaps of filled carton are folded down as carton passes through heating and cooling sections. Turntable then transfers carton to second lane where front flap is similarly sealed. Unit handles 120-160 cartons/min., changeover from one size to another takes about 30 min., and a special closer permits speeds to 200/min.

New Units Automate Wrapless Cartoning

Now available as a complete cartoning system for a new heat-sealable rigid carton that requires no overwrap are the above fully automatic set-up and closing machines. For carton details see New Packages and Products.

System (Diotite) is applicable to packaging of frozen foods, cookies, candy, cereal, and crackers. Moreover, it offers a significant advance in frozen-food packaging at a cost equal to or slightly less than present packaging cost of such items as frozen vegetables, fish, and cook-in pouches.

Cartons are delivered to a packer's plant in the flat and are erected on a special unit. Available barrier materials include wax, polyethylene, or foil, each combined with the board. They are handled by a special heat-sealing closer. Cartons without such barrier materials are closed by conventional heat sealing.



WITHOUT OVERWRAP, unit ups barrier performance, curbs unlocking, sifting.

Furthermore, cartons can also be formed into trays or rigid boxes with tuck-in flaps. System requires only a set-up unit for fast, automatic erecting of trays or boxes for bakery and similar products requiring only board protection.

All types of cartons can be printed in a full range of designs which can be reproduced by established techniques. And all cartons can be easily filled by existing fillers or by hand.

British experience with the system indicates that one operator can handle both former and closer, with additional labor required for filling, case packing, etc.—*Continental Can Co., Boxboard & Folding Carton Div., 530 Fifth Ave., New York City.*

Circle 251 on Reader Service Card

MECHANIZE... PROFIT-WISE!

...with a LAMSON AUTOMATIC PALLET LOADER

Palletizes cartons, cases, rigid bags quickly, economically

Referred to as the "perfect link between packaging and warehousing," the LAMSON AUTOMATIC PALLET LOADER is acclaimed as a huge, money saver by leading producers of package products.

Man hours per pallet load are cut. Considerable saving occurs in the reduction of damage or breakage to cartons. Valuable men are freed for other important duties.

These reductions have been more than enough to amortize the entire cost of the LAMSON AUTOMATIC PALLET LOADER.

The introduction of the Automatic Pallet Loader was another LAMSON first in the materials handling field. A result of the ceaseless engineering vitality of LAMSON men firmly based upon 75 years of experience.

Why not bring your materials handling problems to the leaders in the field? Write LAMSON today for the name of your nearest Field Engineer. Or, simply clip this advertisement to your letterhead and mail to:

PIONEERS *the Conquest* OF INNER SPACE

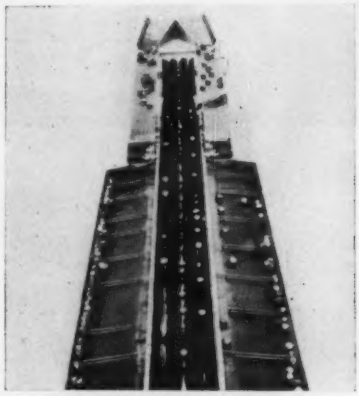
LAMSON CORPORATION

907 Lamson Street, Syracuse 1, New York

PLANTS IN SYRACUSE AND SAN FRANCISCO • OFFICES IN ALL PRINCIPAL CITIES

Manufacturers of Airtube® (Pneumatic Tube Systems) • Integrated Conveying Systems • Pallet Loaders • Selective Vertical Conveyors • Bookveyors® Clinical • Trayveyors® • Food Service Systems • Blowers and Exhausters • Exidust® Central Vacuum Cleaning Systems • Dryset® Air Vacuum Systems

134 CIRCLE 134 ON READER SERVICE CARD



Positions Fruit for Grading

This top-efficient grader automatically orients hard fruit so that its largest diameter can be gaged. To achieve proper fruit positioning, half of the measuring tape along which it passes runs faster than the other, thereby imparting a circular motion to the fruit.

Once in proper position, product passes apertures of decreasing width leading to soft-rubber or plastic-lined collecting trays. Fruit need not be charged by hand, but may be tipped, which ups grading speed.

Units are available in capacities to 22,000 lb. per hr., and can handle soft fruits arranged by hand.—*N.V. Machinefabriek BOA, Enschede, Holland.*

Circle 252 on Reader Service Card

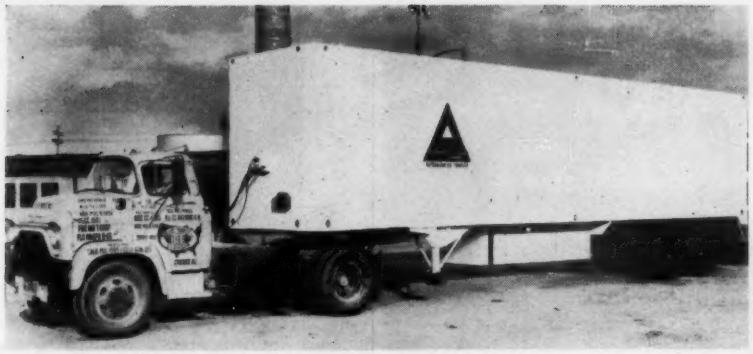
One-Man Drum Heater

Controlled heating of drums of shortening, gelatinous food materials, and other substances, is simple when using a new type heater. Easily lifted and lowered by pulleys and counter-balances, it's readily handled and operated by one man.

Drum to be heated is simply spotted on portable base, then cylindrical heating section is dropped over it, cover put in place, and two power leads hooked up. Separate thermostats in base and in cylinder permit accurate control over temperature range, which runs to 550F.

Cover, cylinder, and base are of aluminum. Entire heater weighs but 95 lb.—*Glas-Col Apparatus Co., 711 Hulman St., Terre Haute, Ind.*

Circle 253 on Reader Service Card



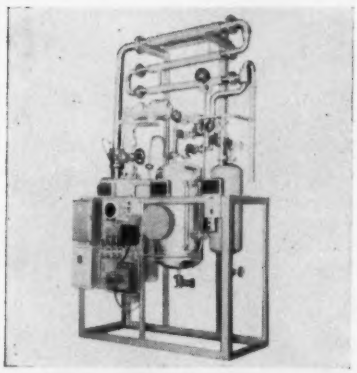
Novel Construction Cuts Operating Costs

Called a complete new design in insulated trailer construction, this 40-ft. reefer trailer offers: Better insulation (heat transfer of only 90 BTU per hr. per deg. F.), capacity of 2,100 cu. ft., and a maximum weight of less than 11,000 lb. Units require minimum maintenance and allow no water absorption.

Reefer consists of an insulated seamless box mounted on a conventional undercarriage and fifth wheel. Structural insulation is sandwiched between two fiberglass-impregnated plastic skins. Large slabs of this sandwich panel form complete seamless sides, roofs, floors, and ends. Panels are then bonded together with epoxy resin.

This construction restricts heat flow because there are no metallic beams or risers to act as heat transmitters or fins. In addition, curbing of water absorption can eliminate the waste of as much as 225,000 BTU of refrigeration, which is what would be required to re-freeze an estimated 1500 lb. of accumulated water during pull-down.—*Hupp Corp., Perfection Industries Div., 1135 Ivanhoe Rd., Cleveland.*

Circle 254 on Reader Service Card



Reaction-Distillation 'Pilot'

Now available is a new line of reaction-and-distillation pilot plant assemblies. They come completely shop assembled and tested, ready for direct installation and operation.

Extremely compact (photo), the "packaged" units are supplied in standard 30 and 50-gal. sizes. Included are an agitated heated reactor (still pot), condenser, receivers, interconnecting piping, and instrumentation. Only 26 sq. ft. is required to set up 30-gal. model.

This equipment is particularly recommended for the varied requirements of general experimentation, as well as for small-scale production operations.—*The Doyle & Roth Mfg. Co., Inc., 136-50 24th St., Brooklyn 32, N. Y.*

Circle 255 on Reader Service Card

Easy-Fit Level Controller

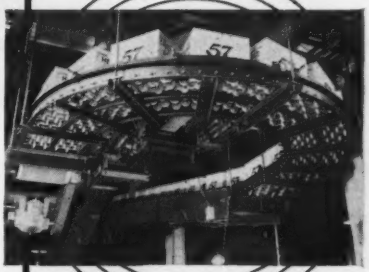
Designed to control level of materials in hoppers, bins, or chutes, new 7-in.-dia., explosion-proof switch unit may be fitted directly through surface of bin. In short, it doesn't need a special adapter ring for mounting.

Unit is furnished with one control switch for operating a relay or feeding device. Buyer may specify two such switches where required. —*Syntron Co., 460 Lexington Ave., Homer City, Pa.*

Circle 256 on Reader Service Card

MECHANIZE... PROFIT-WISE!

WITH LAMSON ENGINEERED CONVEYOR SYSTEMS



Engineers Break A Bottleneck

It's True.

Mechanization will increase the capacity of your present buildings and the production of your present equipment. Increased profits will amortize the expense.

But, you need the touch of experienced materials handling engineers to guarantee this result. That is where LAMSON leads all the rest.

During the past 75 years, LAMSON engineers have created more custom engineered conveyor systems that have cut costs, raised production and profits than any other firm. For complete, professional service from problem analysis through installation and beyond, you can depend on LAMSON.

Write LAMSON today for a complete conveyor catalog. It may provide the answer to your materials handling problem. Or, simply clip this advertisement to your letterhead and mail to:

LAMSON

LAMSON CORPORATION

907 Lamson Street, Syracuse 1, N. Y.

PLANTS IN SYRACUSE AND SAN FRANCISCO
OFFICES IN ALL PRINCIPAL CITIES

stops sticking

speeds packaging

cuts cleanup

saves money

SLIPICONE

silicone release agent

"wherever sticking is a problem"

SLIPICONE® goes on in a breeze . . . makes any surface slick . . . keeps adhesives, packaging materials and foods from sticking or piling up where you don't want them . . . keeps equipment cleaner, more sanitary . . . assures neat, attractive packages and labels.

SLIPICONE is nontoxic . . . safe to use in contact with all foods. Stays effective over a broad temperature range . . . from 40 below to 400 above zero!

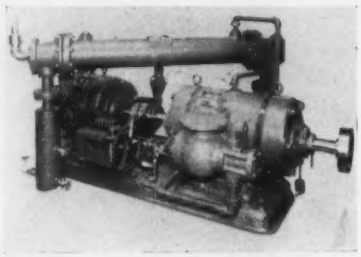
SPRAY OR WIPE IT ON

SLIPICONE comes in four handy sizes: 12 oz. aerosol can; 2 and 8 oz. tubes; 10 lb. can . . . all economical to use.

Get SLIPICONE from your paper merchant, packaging materials supplier, or write Dept. 3709a for name of nearest distributor.

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN



Preassembled Compressor

Compact, preassembled, 2-stage multivane-rotary compressor features space-saving overhead intercooler.

Unit is specially designed for simplified installation. All that is required for setup is addition of motor and air and water piping.

Models in new line cover capacities from 279 to 3,300 cfm., with discharge pressures to 125 psi.

There is arrangement for direct connection to electric motors, gas motors, or gear-turbine drive. Stages consist of cylinders with thoroughly water-jacketed heads. Reversal of airflow is avoided by locating intake and discharge openings in a horizontal plane on opposite sides of the cylinders.—*Fuller Co., Catasauqua, Pa.*

Circle 257 on Reader Service Card

Over-Door Fly Stopper

Operating on air-rebuff principle, over-door anti-fly unit (photo) sends air through 4-in. slot in down-flow that covers entire width of passageway.

"Invisible wall" thus formed is

Hygrade installs 4 C & K Frank Wrappers to meet increased production requirements

Each machine capable of wrapping more than 3,000 1-lb. packs per hour.

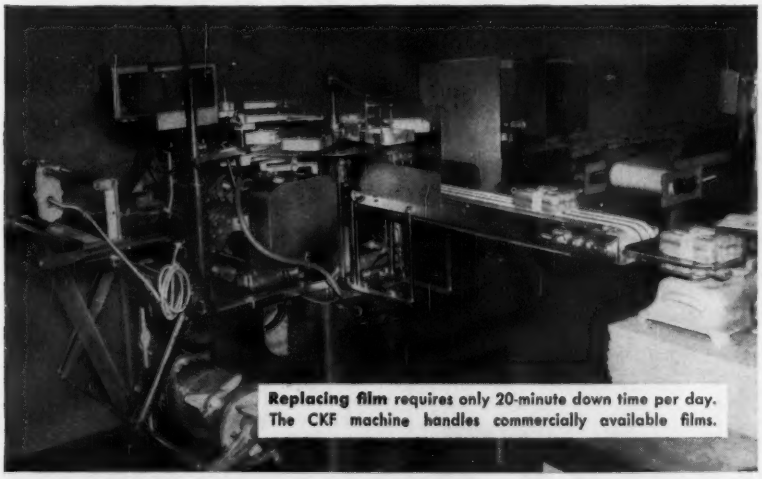
The future looks good to Hygrade. Frankfurter production is up for this leading meat packer, with further gains anticipated, thanks to its Crompton & Knowles Model CKF, the only automatic overwrapping machine designed specifically for franks. Dave Bruss, manager of Hygrade's Detroit City Plant, says, "With the installation of two additional peelers, we expect to approach the maximum capability of our C & K wrapping line."

The CKF machine wraps 10 franks to the pound, 5 over 5. This creates improved, squared-off packages with greater uniformity, resulting in shipping economies as well as more attractive merchandise.

The new CKF at the Detroit City Plant is one of four presently in operation for Hygrade. Others are wrapping franks at their plants in Indianapolis, Newark, and Philadelphia. All have central lubrication systems, which eliminate time-consuming maintenance. (*Some other machines require lubrication at over 50 separate points!*)

Now packing franks 5 over 5, versatile CKF can run 6 over 6 and 4 over 4 one-pound packages, or 4-, 5- and 6-count single layer packages within a size range of 3" to 4½" wide and 4" to 6½" long. Inset shows tight, attractive package.

Crompton & Knowles is a highly-specialized engineering organization, capable of solving all your packaging problems. Whether you require a single machine wrapping a standard product . . . or a completely integrated project to develop totally new concepts of packaging, consult C & K, makers of high-speed, automatic machinery for wrapping, packing, case forming, sealing and gluing, can palletizing and depalletizing. For full details, including leasing arrangements, write Crompton & Knowles Packaging Corp., Holyoke, Mass., U.S.A.



Replacing film requires only 20-minute down time per day. The CKF machine handles commercially available films.

CROMPTON & KNOWLES
C&K
PACKAGING CORPORATION

Stands out in PACKAGING

National Sales and Service Offices: NEW YORK CHICAGO • LOS ANGELES • ATLANTA • DALLAS CLEVELAND • BERKELEY, CALIF • SEATTLE WINTERHAVEN, FLA. • TORONTO • MONTREAL

All Mathews conveyer systems aren't this spectacular, but they all deliver outstanding performance

• It's true that everyone can't use an order-selecting system like this — but — it's also true that everyone specifying conveying equipment has a right to expect this type of *outstanding performance.*

You can have the benefit of well-planned mechanized handling in *your* plant. Mathews Engineers would like to work with you in developing a conveying system that will create a smooth flow of *your* product — a system that will deliver outstanding performance *for you.*

GENERAL OFFICES ..... MATHEWS CONVEYER COMPANY
Ellwood City, Pennsylvania
WESTERN DIVISION ..... MATHEWS CONVEYER COMPANY WEST COAST
San Carlos, California
CANADIAN DIVISION ..... MATHEWS CONVEYER COMPANY, LTD.
Port Hope, Ontario, Canada

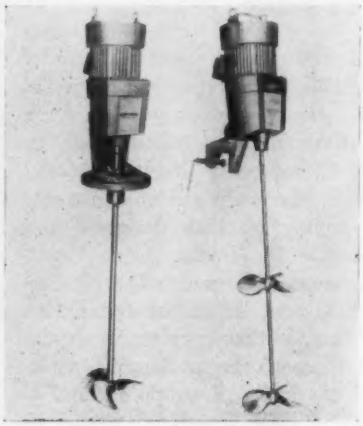
Over Fifty Years of Leadership in Mechanized Handling

MATHEWS

sufficient to keep flies out, yet is scarcely noticeable by persons walking through.

Flow is supplied with one-piece cast-aluminum propeller, which is powered by ¼-hp., 60 cycle, 115v. motor. Called "Fly Walls," units are stocked for standard door widths, with other sizes available on special order.—*Super Vacuum Mfg. Co., 319½ E. 17th Ave., Denver, Colo.*

Circle 258 on Reader Service Card



Top-Efficient Mixers

Designed as integral units, these new mixers offer increased efficiency, greater handling convenience, and maintenance-free operation. Under normal operating conditions, they do not require lubrication or adjustment for five years.

For fast, accurate coupling in one simple operation, units (Lightnin) have a unique drive chuck that is always above maximum fluid level of tank. A flat on mixer shaft insures positive grip, and motors are ball-bearing—totally enclosed or explosion proof.

In portable line (right in photo), highest mixing efficiency is attained by a position-indexing device on housing ball and clamp socket. Mixer can be adjusted 90 deg. in vertical plane and 360 deg. in the horizontal. A damping pad between housing ball and clamp socket minimizes vibration and permits use of longer shafts. All adjustments of clamp, wedge assembly, and chuck are made with a single Allen-type hex wrench.

Fixed-mounting mixers are designed for both open and closed tank installations. Closed-tank ser-

ies mount on standard IPS flanges and can be furnished with either newly-designed stuffing box or rotary mechanical seal.

Mixers range in size from ⅛-3 hp., and all but the ⅛-hp. unit are available in fixed-mounting design. Direct-drive speeds are 1,750 and 1,150 rpm. And a gear-drive model operating at 350 rpm. offers 45% more flow than previous designs.— *Mixing Equipment Co., 170 Mt. Read Blvd., Rochester, N. Y.*

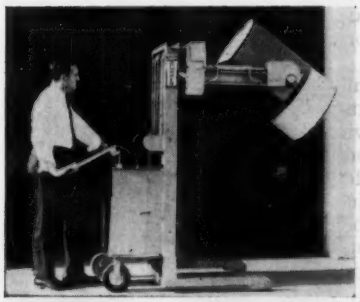
Circle 259 on Reader Service Card

Storage-Space Saver

Wall to wall, floor to roof utilization of space in freezers and refrigerated storage warehouses is offered by a new storage-rack arrangement.

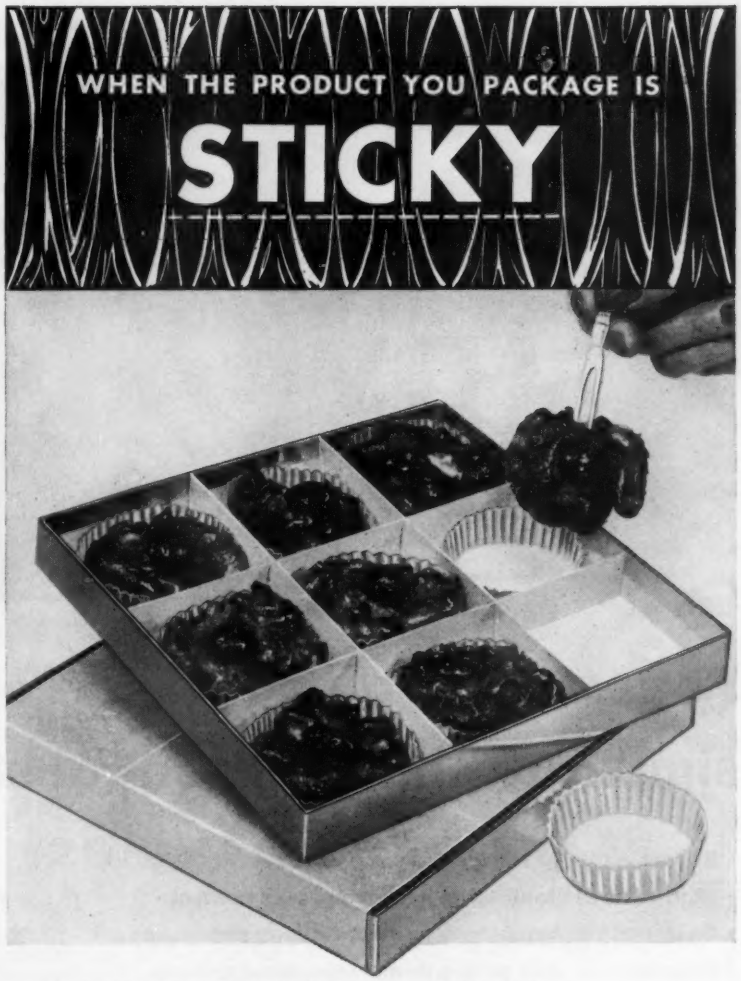
Called "Drive-In" Speedrack, its design eliminates horizontal cross beams, thus allows loaded fork truck to drive right into rack to unload or pick up pallets. Space formerly required for aisles is used for storage. Pallets may be stored as many tiers high as lift truck will travel, and racks do not have to be fastened to floor, walls, or roof. — *Storage Products Corp., 4418 Oakton St., Skokie, Ill.*

Circle 260 on Reader Service Card



Versatile Drum Dumper

Designed for low-cost container handling—grabbing, travel, lifting, and emptying—new Tubar drum



PATAPAR RELEASING PARCHMENT WILL PROVIDE THE "LET-GO" YOU NEED

Here, the packager has to worry about a substance whose moisture and sugar content results in extremely adhesive qualities . . . but the product must never stick to its container. Patapar Releasing Parchment provides the needed combination of resistance to moisture and sugar penetration, and low adhesion factor.

Other Patapar Releasing Parchments provide quick release for foodstuffs such as frozen meats, where ice makes separation difficult . . . plastics, where extreme temperatures and inherent tackiness make it necessary to include the releasing parchment in the production process . . . and adhesive materials, where the product can stick to itself or its user.

Send for free samples of Patapar Releasing Parchments and informative brochure describing the whole Paterson line of Releasing Parchments.

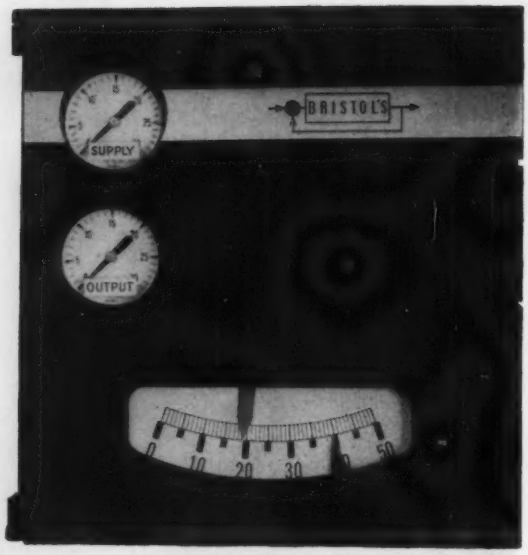
Patapar®
RELEASING PARCHMENT

75th ANNIVERSARY · SPECIALTY PAPERS FOR INDUSTRY · SINCE 1885

PATERSON PARCHMENT PAPER CO.
BRISTOL, PENNSYLVANIA
Sales Offices: New York, Chicago • West Coast Plant: Sunnyvale, Cal.

NEW

BRISTOL'S



Series 624 A/D* pneumatic controller features simplicity and high control stability

- **Simple modular design for ease of servicing**
- **High control stability for closer process control**
- **Designed for batch-type and continuous processes**
- **Proportional and proportional-plus-reset control models available**

Top control performance with maximum simplicity plus standard Bristol precision measuring elements—those are the key features of the Bristol Series 624 Controller. The 624 uses the same renowned elements that have earned such a reputation for accuracy and dependability on other Bristol automatic controlling and recording instruments—perfected through wide experience and many years of development.

Self-contained modular design of the control unit speeds servicing. The whole modular unit, consisting of an aluminum casting with working parts made of stainless steel, Ni-Span C, and Neoprene diaphragms, can be removed by taking out only two screws and a link.

Outstandingly compact, the aluminum instrument case (only 8" x 8" x 5" overall) is completely weatherproof. It is designed for either flush, surface, panel, or valve mounting. Attachments for pipe mounting (2-inch pipe) are available. Write for complete data on the versatile and economical 624 A/D. The Bristol Company, 115 Bristol Road, Waterbury 20, Conn. 0.35

Advanced Design

CONTROLLERS OFFERED FOR:

PRESSURE AND VACUUM: Ranges from full vacuum to 10,000 psi.

TEMPERATURE: Ranges from —100°F to +1000°F.

FLOW AND DIFFERENTIAL PRESSURE: With mercury-type manometer and dry-type differential unit.

LIQUID LEVEL: With bulb unit and mercury manometer and dry-type differential unit.

HUMIDITY: Zero to 100% relative humidity.

CONTROL UNIT CHARACTERISTICS:

PROPORTIONAL BAND: 0-400% continuously adjustable, direct- or reverse-acting.

RESET: 0.1 to 50 repeats per minute.

AIR PILOT: Non-bleed type.

PILOT CAPACITY: 3.0 scfm.

FREQUENCY RESPONSE: Flat to 300 cycles per minute.

TEMPERATURE STABILITY: Less than 0.25% change in the output pressure for 90°F temperature change.

MATERIAL: Aluminum housing; 316 stainless steel internal parts; Ni-Span C feedback element.

BRISTOL... for improved production through measurement and control

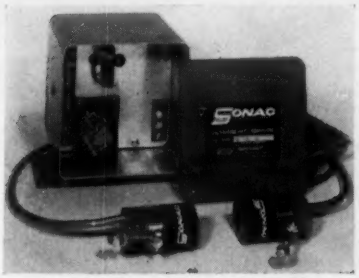
AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

dumper gives control of all movements with a single pushbutton.

Models are available to meet range of requirements from high-speed heavy duty down to occasional-use operation. All of them rotate drums 180 deg. at any point in lifting sweep—a feature enabling use of a single dumper to feed receiving hoppers at various heights.

New hydraulic grab, with suction pads, securely holds drum in every position. And full-control turning device permits either fast or slow pouring.—*Uhrden, Inc., Dennison, Ohio.*

Circle 261 on Reader Service Card



Ultrasonic Sensor-Switcher

Utilizing ultrasonic energy for its "beam," this new non-contact sensing-and-switching instrument, called Sonac, can be employed as the activator in a wide variety of applications.

Among these are counting, sorting, routing, door control, hopper and bin level control, machine safeguarding, and plant protection.

Device's two hermetically sealed sensors "work" on liquids, solids, ferrous and non-ferrous metals, opaque or transparent objects. And performance is not affected by ambient light, dust, or any normal build-up of residual solids on the acoustic lens.

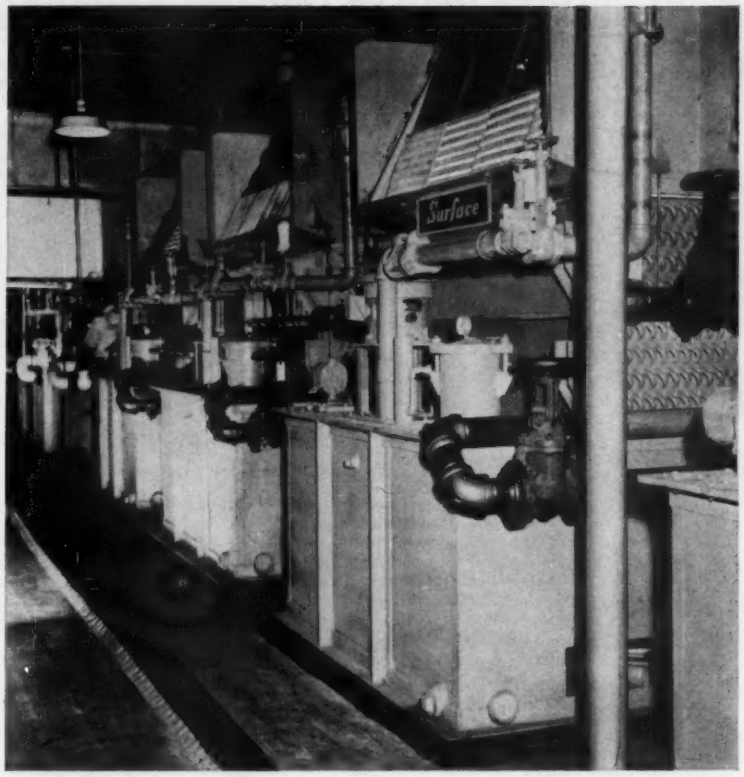
Power consumption is about 1w., and operating temperature range is —100F. to 220F. — *Delavan Mfg. Co., Electro-Sonics Div., West Des Moines, Iowa.*

Circle 262 on Reader Service Card

Latest Dough Divider Forms 12,000 Pieces/Hr.

Designed for increasing bread-dough production, a new divider is available either as a 6 or 8-pocket unit.

Capacity of 6-pocket unit is 9,000



120 GRAINS CUT TO 45 IN 200,000 cfm OF AIR WITH 85° TOWER WATER

Without Kathabar, this job would have taken 1800 tons of refrigeration, at about 35F and reheating air from about 45F to 98F! With Kathabar the job took 63 hp instead of 2000. Ask the men who have seen Kathabar Type C units serve for years with practically no maintenance. Write for specific information.

Surface

SURFACE COMBUSTION

Division of Midland-Ross Corporation MR

2382 Dorr St., Toledo 1, Ohio

Send facts on Kathabar systems for the following application:

name and title.....

company.....

street.....

city.....*zone*.....*state*.....

New inkless way to imprint pouches, bags, wraps, strip packs

Even heat sealers won't rub off markings!

"WRAP-A-PRINTA"® packaging machine imprinting attachment Patented

• Makes crisp, opaque, really permanent impressions in any color • Uses low-cost roll leaf instead of ink . . . perfect for "hard-to-print" films, coated foil, waxed paper • Fits in idle space on all pouch, bag, wrapping, bundling machines • Fully automatic . . . synchronizes perfectly with continuous or intermittent web feed • Imprints anything from tiny code-date to 4" x 1" design • Ideal for short cutoffs on pouch machines — as short as ½"!

For full details write for "Bulletin RAP-1"

First and foremost in automatic production-line CODING, MARKING and IMPRINTING machines

Gottscho®

GOTTSCHO Dept. G
HILLSIDE 5, N. J.

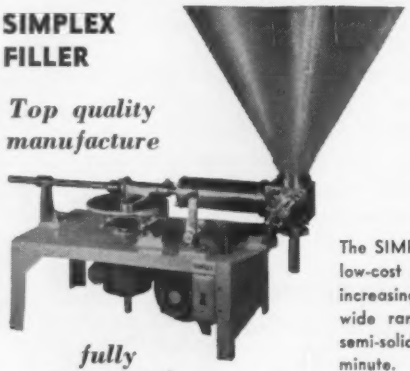
In Canada: Richardson Agencies, Ltd. Toronto and Montreal

CIRCLE 3 ON READER SERVICE CARD

Filling "Boil-in-the-Bag"???

SIMPLEX FILLER

Top quality manufacture



fully guaranteed

- HANDLES LIQUIDS AND SEMI-SOLIDS!
- ADJUSTABLE 1 to 32 OZ.!
- EASILY CLEANED

The SIMPLEX Model "A" piston filler is the low-cost answer to accurate filling of the increasingly popular film bag—handles a wide range of food products, liquid and semi-solid, at speeds of 15 or 30 fills per minute.

WRITE TODAY FOR USER LIST AND COMPLETE INFORMATION.

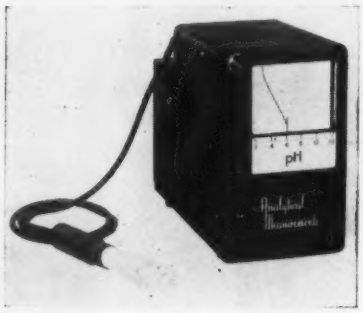
F. L. BURT CO.—571 7th ST.—SAN FRANCISCO 3, CALIF.
PHONE KLONDIKE 2-2020

Name .....
Address .....
City ..... State .....

Equipment & Supplies

dough pieces per hr., and 12,000 per hr. for the 8-pocket machine. Divider accommodates a new, larger power and drive arrangement, with power unit providing 7½ hp.—*Baker Perkins, Inc., Food Machinery Div., 1000 Hess, Saginaw, Mich.*

Circle 263 on Reader Service Card



Strip-Charts pH Changes

Permanent, continuous pH records are strip-charted with this handy combination probe-and-recorder unit.

At 1 in./hr. speed, 63-ft. roll enables month-long monitoring recordings. Shifts to other chart speeds—up to 16 in./hr.—may be made by simple gear adjustment.

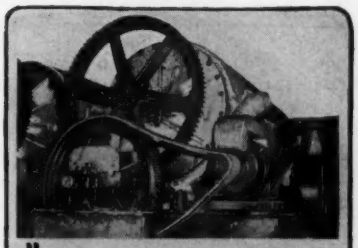
A switch on front panel permits cutting out drive to employ unit as conventional indicating pH meter. —*Analytical Measurements, Inc., 585 Main St., Chatham, N. J.*

Circle 264 on Reader Service Card

Roll-Up Cooler Door

Overhead-type cooler doors at this dairy are both a convenience feature and space saver.

Doors are Styrofoam-insulated and fully gasketed to maintain 34-deg.-F. interior temperature. A unique sealing mechanism insures an airtight fit, yet permits easy operation. Special facings keep doors



"THIS LUBRICANT INCREASED CHAIN LIFE 4 TIMES"

—says FASTERFAT, Division of National Sea Products Limited

"Two years ago we switched from the lubricant we were then using to your LUBRIPLATE, and we are pleased to inform you that we have had very excellent satisfaction from its use. High speed silent chains on the drives of our fish meal cookers, which were formerly worn out in about six months, are still in service after two years."

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

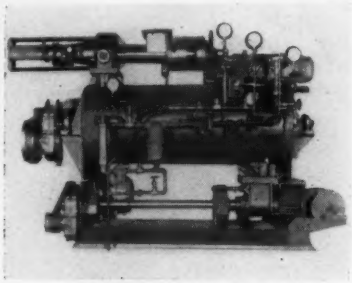
CIRCLE 7 ON READER SERVICE CARD

Equipment & Supplies

new looking and cut exterior maintenance.

Units (Overdoors) reportedly provide a working opening twice as large as sliding or swinging doors, yet require less operating space. Because they roll up into unused ceiling space, they are not damaged by dock traffic, and may be easily opened after truck has backed up to dock for loading.—*Barber-Colman Co., Rockford, Ill.*

Circle 265 on Reader Service Card



New Cooker-Extruder Cuts Power Costs

This new continuous pressure cooker-extruder gelatinizes starches and cereal grains to create an expanded product by forcing cooked material through a relatively thin die. Heat necessary for cooking is provided by introduction of steam, which substantially cuts power requirement of extruder.

In operation, material introduced at feeder inlet is delivered to cooker through a pressure sealing unit without escape of high pressure steam. Steam, or occasionally steam and water, are added through a bustle. During 3-5 min. cook, material is agitated by a paddle controlled by a variable speed drive.

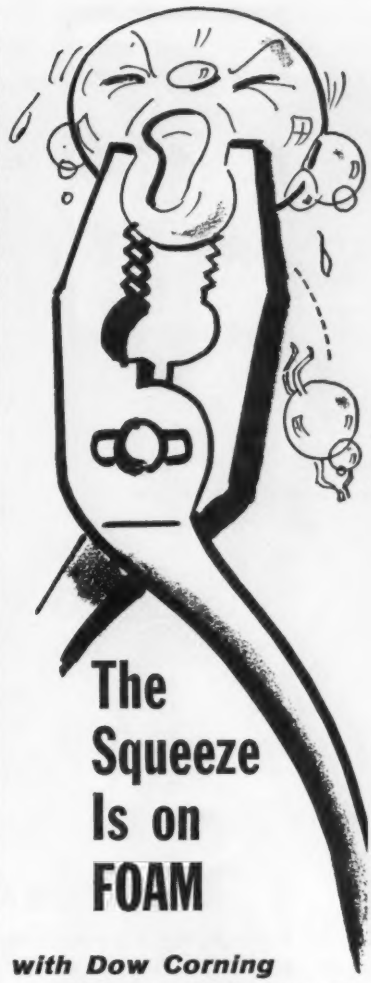
Product drops from cooker into a high-speed extruder which forces it through a single stationary die. A variable speed cutoff knife at die discharge produces product in final form without further grinding or crushing.—*Sprout, Waldron & Co., Muncy, Pa.*

Circle 266 on Reader Service Card

Eases Pallet Handling

Remotely controlled, a new pallet stacker offers an elevating work platform with safety wall for operator that brings work load to convenient height.

Called JackStacker, it has a full



The Squeeze Is on FOAM

*with Dow Corning Silicone Defoamers**

There's a *right* tool for every job. In foam control it's Dow Corning silicone antifoamers or defoamers . . . job-proved thousands of times over as the most efficient, most economical, and most versatile foam suppressors available.

*At prescribed levels, are sanctioned by FDA

FREE SAMPLE
and new manual on foam control

first in silicones
Dow Corning CORPORATION
MIDLAND, MICHIGAN
Dept. 3709a

Please rush a FREE SAMPLE of a Dow Corning silicone defoamer for my product or process, which is (indicate if food, aqueous, oil or other): _____

NAME _____

POSITION _____

COMPANY _____

ADDRESS _____

_____

CIRCLE 143 ON READER SERVICE CARD

Verdict for Tornado Mill at Kingsmill Foods...

VERSATILE
EASIER TO CLEAN
HIGHER CAPACITY

The evidence is overwhelming. The exceptionally versatile Stokes Tornado Mill is doing a yeoman job at Kingsmill Foods, according to W. G. Kingsmill, President of the Toronto food processing enterprise.

Used for a variety of grinding and comminuting jobs, the Tornado delivers improved product quality as well as greater product uniformity . . . all along the line. Kingsmill has found that less heat is generated in grinding . . . and product flavor is vastly improved. What's more, wet, sticky products are processed without clogging . . . and there are no special blades required when switching from one product to another.

The new mill moves easily from station to station . . . it's simple to operate . . . and a breeze to clean. Disassembling the rotor for cleaning is now a matter of seconds. Kingsmill also likes the greater surface area afforded by the 360° horizontal screen . . . it gives them more uniform products at higher capacity.

Find out for yourself the many ways the Tornado Mill can help your process. The Stokes representative in your area will be glad to give you all the facts. Why not give him a call today. Or write to us directly.

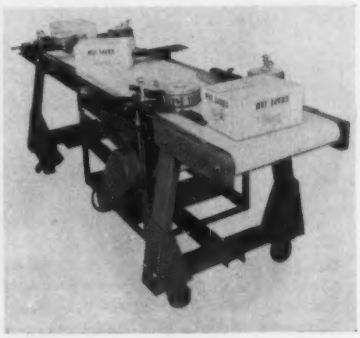
Size Reduction Division
F. J. STOKES CORPORATION
5500 Tabor Road, Philadelphia 20, Pa.

STOKES

Equipment & Supplies

set of controls for steering, lifting, lowering, and driving in forward and reverse—all located on operator's platform. Elevating work platform can be designed to hold pallets, skids, or floor trucks for order picking operations. — *Lewis-Shepard Products Inc., 125 Walnut St., Watertown, Mass.*

Circle 267 on Reader Service Card



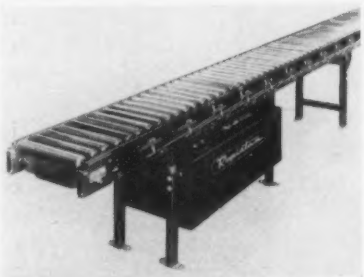
Fast 4-Side Case Marking

Here is a new setup for speedy, automatic marking of product identification on all four sides of shipping cases.

Arranged to handle the multi-printing in a single pass, equipment comprises a belt conveyor, one or more turners, adjustable side guides, and a set of friction-powered Rolacoder imprinters.

Buyers may choose from five different versions. One, for example, marks all four sides on conveyor (photo). Another provides for imprinting two sides of cases in the case sealer and the other two sides upon leaving sealer.—*Adolph Gottscho, Inc., Hillside 5, N. J.*

Circle 268 on Reader Service Card



Handles Diverse Loads

This live-roller adjustable-pressure conveyor has been redesigned for larger, wider, heavier, and more diversified types of material. Included are cans, drums, or other

These Taylor controlled retorts process eight varieties of Cadillac dog and cat food with minimum down-time between cooks.

"Taylor Instruments will pay for themselves in one year!"

says: **Mr. B. A. Bernard,** *Packer of Cadillac Dog Food, Camden, New Jersey.*

. . . " not to mention the benefits of improved quality of product and steam savings." Fine Cadillac products packed by B. A. Bernard & Co., Inc., include "5 in 1" meat combination, beef, beef liver, horse meat, lamb, chicken, puppy food, as well as "Chicken 'n Liver" for cats.

To save time in processing this variety of products, the company has installed Taylor FULSCOPE* Recording Controllers with Process Timing mechanism on each of its retorts. The chance of human error is almost eliminated because all the operator does is load the retort and push the button. Timing starts automatically when the retort reaches processing temperature, and the temperature is maintained automatically until the end-of-cook signal light turns off.

In most cases these Taylor Control Systems will pay for themselves in one season, in actual cost of production. Perhaps even more important are the benefits of consistently uniform processing that builds product brand acceptance.

There is a Taylor system designed to give you precise control of every phase of food processing. To find out about them just call your Taylor Field Engineer, or write for **Catalog 500MP.** Taylor Instrument Companies, Rochester, N.Y. or Toronto, Ont.

*Reg. U.S. Pat. Off.

Taylor Instruments **MEAN ACCURACY FIRST**

Atlas

ENGINEERED FLOORS PROVIDE POSITIVE PROTECTION

. . . from bacteria and corrosion!

Atlas Food Plant Floors provide positive protection against a wide range of corrosives—from the most aggressive food acids to today's strongest cleaning agents. Since they are not attacked they are completely sanitary and offer no haven where harmful bacteria can collect and germinate.

Individually engineered to your exact specifications, these floors combine permanent attractiveness and wearability that eliminates costly maintenance.

For complete information write for your free copy of Bulletin 3-2.

Atlas MINERAL PRODUCTS COMPANY
MERTZTOWN, PENNSYLVANIA

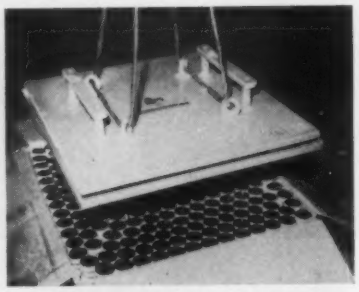
Equipment & Supplies

chimed bottom containers, and wooden crates or pallets with bottom slats and materials with flat rigid surfaces.

Designated Model 1250, there are eight frame widths up to 36 in. and rollers are set high to convey packages wider than roller sections. Maximum load is 100 lb. per running foot.

Unit enables accumulation of packages by use of trigger rollers linked to a series of pressure rollers. Trigger rollers are set high and pressure rollers are set below the drive belt. When a package stops over a trigger roller and depresses it, pressure roller lowers and drive belt drops away from carrier rollers. — *Rapids-Standard Co., Inc., 342 Rapistan Bldg., Grand Rapids, Mich.*

Circle 269 on Reader Service Card



New Magnetic Can Lifter

Cans and other light materials may be efficiently lifted with this new permanent magnet, while manual discharge mechanism easily releases the load.

Operator simply presses a pair of handles which, in turn, push a stainless steel cover plate away from face of magnet. Load is then forced out of magnetic field and released. Illustrated unit measures 18x20 in. and contains ceramic permanent magnets. Other sizes and shapes are available.

A particularly useful application is removing cans from cartons and placing them on conveyor belts. Maker emphasizes that use of permanent magnets eliminates electrical expense, coils, power failure, and maintenance cost. — *Stearns Magnetic Products, 635 S. 28th St., Milwaukee.*

Circle 270 on Reader Service Card

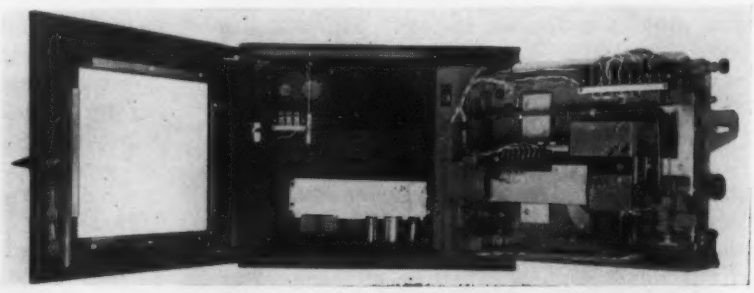
New Vari-Speed Control For Pumps, Fans

A new control system for centrifugal pump and fan drives provides variable speeds from all-electric induction motors.

Generally, speed control is accomplished by a signal from a small potentiometer that can be actuated by liquid level, temperatures, pressure, etc. Drive system (Reactodyne) is designed for use on "cubic" loads where torque requirements fall off rapidly at lower speeds, rather than on constant torque loads. It operates from a standard 220/440 v., 60 cycle a.c. power supply.

Motors are available in horizontal or vertical open-type design, 1-30 hp. with 2:1 speed variation. Higher speed ratios are also available.—*U. S. Electrical Motors, Inc., Box 2058 Terminal Annex, Los Angeles.*

Circle 271 on Reader Service Card



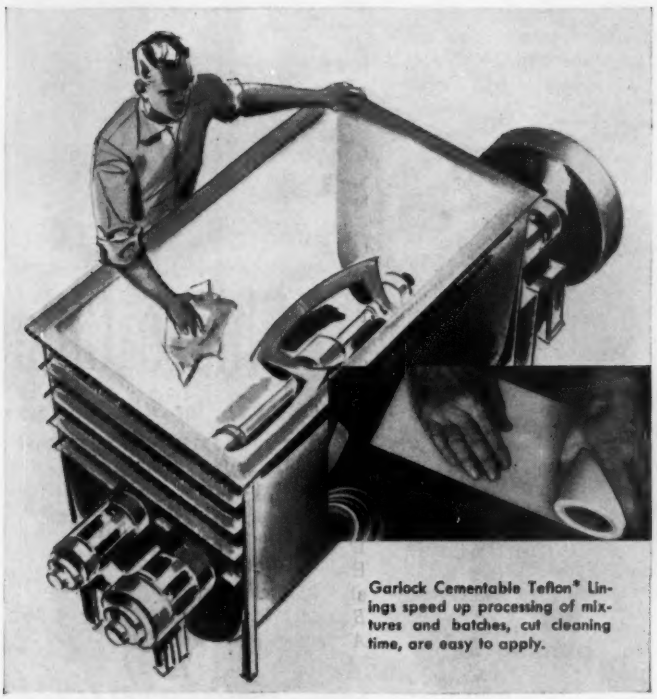
Recorder Houses Differential Refractometer

Mounted within this standard strip-chart recorder is a highly sensitive differential refractometer that offers numerous applications —process monitoring, quality control, pilot plant studies.

Unit measures liquid index of refraction changes as small as 0.0000007 unit, yet requires no more space than a strip-chart re-

CEMENTABLE TEFLON LININGS

for Anti-Stick Service



Garlock Cementable Teflon* Linings speed up processing of mixtures and batches, cut cleaning time, are easy to apply.

Here's an ideal way to move sticky powders and mixtures swiftly, freely—without danger of contamination. Apply Garlock Cementable Teflon Linings!

Nothing sticks to Teflon. This unique lining material keeps most confections, concentrates, pastes and difficult powders flowing smoothly through hoppers, chutes, feeders, mixers, packaging machines. Cementable Teflon Linings prevent material build-up without the need for vibration equipment or manual attention.

Will not mix with—or harm—foodstuffs. Teflon is completely odorless, colorless, non-absorbent, non-contaminating. It can be exposed to the most reactive fluids, acids and alkalies—and at temperatures as high as 500°F—without danger to itself or to mixtures being processed.

Cuts cleaning time. For clean up, just wipe off the surfaces . . . no time wasted in scraping or soaking with special solutions. Sticky products "come clean" with minimum effort on candy bar frames, cookie flats, bakery rolls, proving pans. And, sanitation is greatly improved.

Adheres to any surface. Garlock Cementable Teflon Linings can be securely bonded to metals, wood, glass, rubber, plastics and ceramics with a special Garlock adhesive.

Available in all sizes. Garlock Cementable Teflon Linings come in tape form—.005″ to .250″ thick through 24″ wide; in standard sheet sizes thru 24″ x 24″, $\frac{1}{32}$″ to 2″ thick; and in standard sheet sizes thru 48″ x 48″, $\frac{1}{16}$″ thru 1″ thick.

Find out how you can save time and money. Discuss Cementable Teflon Linings with your local Garlock representative. You'll find him at the nearest of the 26 Garlock sales offices and warehouses throughout the U.S. and Canada. Or, write for Catalog AD-177, Garlock Inc., Palmyra, N.Y.

GARLOCK

Canadian Div.: Garlock of Canada Ltd.

Plastics Div.: United States Gasket Company

Order from the Garlock 2,000 . . . two thousand different styles of Packings, Gaskets, Seals, Molded and Extruded Rubber, Plastic Products

*Du Pont Trademark

LA PORTE

FLEXIBLE STEEL CONVEYOR BELTS

The open-mesh construction of La Porte Belts traps food products, arresting movement in any direction. Thus, troughing is eliminated and the full width of these belts is utilized. Another good reason why La Porte Belts are widely used on sorting and grading tables, in scalders, washers, dryers, cookers as well as in freezers and dehydrators.

In addition, the open-mesh feature speeds up sterilizing and drainage, also permits the circulation of liquids and air around products in process. La Porte Belts are easily installed, shortened, lengthened, repaired—with a pair of pliers.

If you freeze, can, dehydrate, pickle, package, store or ship food, it will pay you to use La Porte belts. Available in ½" x 1", or 1" x 1" in any length and practically any width. Ask your mill supplier or mail coupon for illustrated literature and prices.

MAIL COUPON TODAY

LA PORTE MAT & MFG. CO.
Box 124
La Porte, Indiana

Please send free literature on your Conveyor Belt.

NAME_____

ADDRESS_____

CITY_____ STATE_____

Equipment & Supplies

corder. Full scale ranges as narrow as 0.0003 and as broad as 0.16 unit are possible. Null balance principle is used and zero drift is less than 0.000003 unit per 24 hr. Batch or continuously flowing samples may be analyzed, and instrument is insensitive to changes in both ambient and sample temperature.

Principle of operation is measurement of the bending of a light beam passed through a liquid sample. Typical applications include: Gaging degree of hydrogenation of fats and oils; sugar content of fruit juices, beverages, and syrups; salinity of brine solutions; liquid chromatographic detectors, and ion exchange measurements. — *Water Associates, 45 Franklin St., Framingham, Mass.*

Circle 272 on Reader Service Card

Automatic Batching Unit

Improved automatic batching of ice-cream is offered by this new standardized proportioning system.

Operating costs are cut by increased batching speed and elimination of human errors. Moreover, precision weighing assures economical use of ingredients and duplication of formulas, whether in repetitive batching of same formula or in successive batching of different ones. And it provides effective quality control.

System ("Remocon") having a panel for each ingredient, controls in sequence, automatic weighing of each material into a single weigh tank. Operator merely sets desired weight of each material on proper panel from a predetermined formula. As each ingredient is added, pilot lights indicate batch cycle progress.

When cycle is complete, a light

New Type Organic Chlorine Powder

KLENZADE

Tri-Chloro-Cide

Non-Corrosive for All Stainless Steel Processing Equipment

NO FILM
NO SEDIMENT

Sparkles in Hardest Water!

HIGH GERMICIDAL STRENGTH

Klenzade has greatly reduced the corrosion problem common to ordinary chlorine sanitizers with Tri-Chloro-Cide — a high powered stable chlorine powder that won't pit or corrode stainless steel. Tri-Chloro-Cide is an *organic* chlorine that produces a clear, sparkling solution of exceptional germicidal strength . . . even in hardest water! Tri-Chloro-Cide is perfect for fogging or rinsing. Leaves no film or sediment. Remarkably stable, quickly soluble, excellent shelf life.

MAKE EQUIPMENT SAFE WITH Tri-Chloro-Cide ORGANIC CHLORINE

KLENZADE PRODUCTS, INC.
Branch Offices Throughout America
DEPT. 30J
BELOIT, WISCONSIN

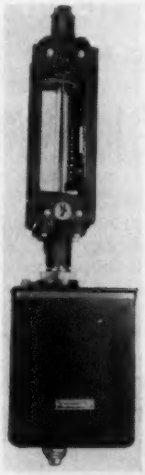
flashes and an audio signal is given. Each ingredient weight can be accumulatively listed on a recorder, such as an electric typewriter or adding machine which provides a complete record, including an immediate total batch weight. Inventory control counters are also available.

Economy of operation is protected through "fail-safe" electrical circuitry. In event of power failure, batching cycle is automatically stopped. When difficulty has been corrected, batching is resumed at point of interruption, thus eliminating any waste of material already in tank.

System uses plug-in components to minimize requirements for spare parts and assures easy replacement.—*Toledo Scale Corp., Scale Div., Toledo 12, Ohio.*

Circle 273 on Reader Service Card

Flow-Monitoring Meter



This new rotameter gages fluid flow and indicates abnormally high or low rates.

Called Magnetic Alarm Rotameter, it activates a warning light or alarm device, also starts or stops a pump, motor, or control unit. Design and construction is simple for economy and easy maintenance.

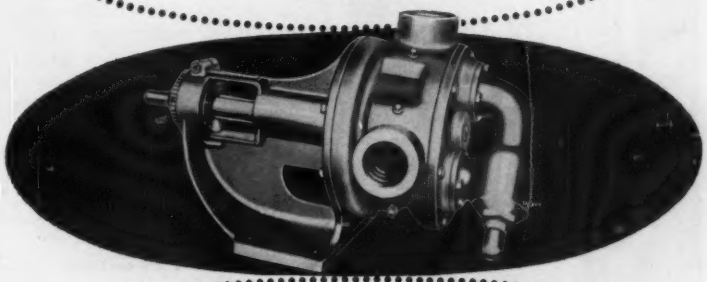
Unit consists of a standard 5-in. scale glass- or metal-tube rotameter and a sensing system mounted above in a weather-proof extension housing. One or two sensing devices (switch assemblies) are mounted on the housing tube. Each unit contains a magnet and an hermetically sealed reed-type alarm switch that activates a high- or low-flow alarm or "start-stop" switch.—*Schutte & Koerting Co., Instrument Div., Cornwells Heights, Bucks County, Pa.*

Circle 274 on Reader Service Card

"Package" Milling Plant

Designed as a "package," primarily to enable the smaller miller to modernize his processing, is a

NOW!
MORE PUMPING CAPACITY
AT LESS COST • WITH VIKING'S
STAINLESS STEEL
PUMPS

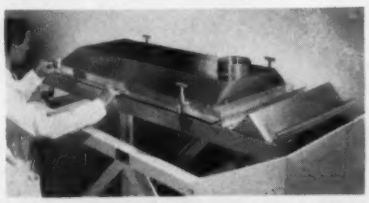


You get more pumping capacity from these new Viking heavy duty stainless steel* pumps because they can be operated up to 100% rated speed. By increasing the speed of a Viking pump its capacity is increased correspondingly. Upwards of $300 to $400 can be saved on some pumping applications. ■ Entirely new, modern foundry facilities and manufacturing processes enable the complete line of Viking alloy pumps to meet more exacting requirements than ever before and at higher speeds. ■ If your specifications call for stainless steel or other alloy pumps, see how you, too, can save on the new line of full speed Viking alloy pumps.
*Also Steel, Monel, Nickel, Ni-Resist, Ductile Iron, Other Alloys
For Complete Information, Write For Catalog Series ME

VIKING PUMP COMPANY
Cedar Falls, Iowa, U.S.A. In Canada, It's "ROTO-KING" Pumps
See Our Catalog in Sweet's Plant Engineer's File
CIRCLE 23 ON READER SERVICE CARD

ENTOLETER *announces...*
BIGGEST ADVANCE IN SIFTERS
THE Cirlyptic® SIFTER

A new line of the highest efficiency sifters has just been added to the Entoleter line of processing equipment... The unique Cirlyptic Sifter action retains product in suspension thereby providing particles more angles of approach and maximum screen put-through. No surface friction greatly reduces screen blinding.



FOR MILK POWDER, PHARMACEUTICALS, PRE-MIX FOODS, CRYSTALS, FLOUR, CHEMICALS, ABRASIVES.

- Highest put-through capacity per screen area.
- No rubber balls to contaminate product.
- Flexibility of speed to achieve optimum screening action.
- All stainless steel construction.
- Meets rigid sanitary requirements.
- One minute disassembly for positive operator cleaning — Simple 3-part construction.

Also Multiscreen Cirlyptic Classifier. Up to 4 positive cuts without screen stacking.

ENTOLETER INC.
SUBSIDIARY OF AMERICAN MANUFACTURING CO., INC.
P.O. Box 904 • New Haven 4, Connecticut

CIRCLE 149 ON READER SERVICE CARD

FOR A PERFECT RECORD OF RETORT PROCESSING

Hang a Cook-Chex tag on every basket before it goes into the retort and eliminate all guess-work when it comes out of the retort. On each Cook-Chex tag, a **chemically impregnated circle** turns from purple to green, to provide infallible proof of proper and complete "in-can" processing. Cannery inspectors approve and recommend Cook-Chex. Major packers all over the world use them to:

1. Eliminate wrong cook schedules.
2. Guard against "by passing" retorts.
3. Warn of any failure in retort processing.
4. Keep retort baskets in sequence.
5. Provide low-cost permanent records for cooking plants.

The cost of Cook-Chex protection is negligible . . . less than one cent for 75 cases of No. 300 cans.

SEND FOR FREE TEST SUPPLY TODAY

You'll receive a generous supply of Cook-Chex at no cost; send your name, title, and plant address to Dept. FE-9.

ATI Aseptic-Thermo Indicator Company

11471 Vanowen Street • N. Hollywood, Calif.

Equipment & Supplies

new pilot/production plant and refining unit for impact milling and fraction separation. Included too, if desired, are the services of an engineer to start up the installation and instruct in its operation.

Systems are available for grinding or classification alone, and for integrated operation. Capacities range 50-150 cwt. per hr. of flour or other grains. Significantly, system may be used not only for milling research, but for actual production in smaller mills and for special small-quantity flours in larger ones.—*Sturtevant Mill Co., Grain Processing Div., Fostoria, Ohio.*

Circle 275 on Reader Service Card

BRIEFS

Pre-Ground Coffee Bagger forms double-wall bags, fills and vibrates package, checks level, closes, and delivers at speeds to 70 per min. Unit (Type KFAS) forms inner liner (Pliofilm, glassine, cellophane) and Kraft outer bag from roll stock. Size changes from 8-16 oz. can be made, and bean coffee can also be handled.—Food Machinery & Chemical Corp., Packaging Machinery Div., 4900 Summerdale Ave., Philadelphia.

Circle 278 on Reader Service Card

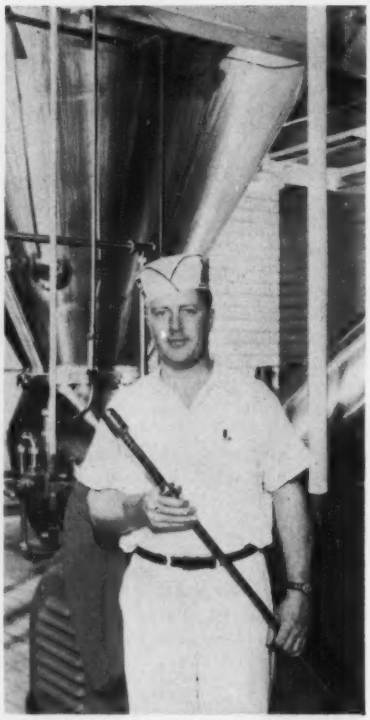
Two-Channel Time Recorder graphs on-off time of two machines or processes on single strip chart. Built-in time totalizer furnishes a visual sum of productive time as continuous readout. Access window permits making notations directly on chart.—Standard Instrument Corp., 657 Broadway, New York City.

Circle 279 on Reader Service Card

Rubber-Coated Flexible Container converts freight-carrying truck to liquid-hauling conveyance to eliminate empty return trips. Single-use plastic liners and stainless-steel fittings may be used for sterile, taste- and odor-free liquid transport. A 4,600 gal. container is 34 ft. long, weighs 450 lb.—Transicold Corp., 1100 S. Taylor Ave., Montebello, Calif.

Circle 280 on Reader Service Card

Top-Feed Rotary Pump handles viscous liquids or particles to ¾



"We get more than twice the nozzle life with Delavan"

says Richard E. Johansen, Plant Manager, Des Moines Co-operative Dairy, Des Moines, Iowa

Des Moines Co-op operates their Mojonnier Spray Dryer at 6000 to 7000 psi producing non-fat dry milk. Because of these high pressures, nozzle life was normally 60 hours.

"We installed a Delavan SDL nozzle over three weeks ago," says Mr. Johansen, "it's operated over 120 hours now and there's no sign of wear."

"Another thing we like about the Delavan SDL is the way it assembles. The nozzle orifice and distributor automatically align themselves when threaded up tight and no special tool is needed."

If nozzle wear, misalignment or difficult assembly are problems with your spray drying operation, try a Delavan SDL.

Write for Catalog SD-1 today.

DELAVAN
Manufacturing Company
WEST DES MOINES, IOWA

in. Available with rectangular 27-in. inlet for fast feeding, or standard 3-in. dia. round inlet. Capacities to 50,000 lb. per hr., 100 psi., 220F. — Creamery Package Mfg. Co., 1243 W. Washington Blvd., Chicago.

Circle 281 on Reader Service Card

NEW SUPPLIES

Spray Coating gives metal surfaces superior corrosion resistance at temperatures to 275F. Product (Pfaudlon 301) is water-suspension of chlorinated polyether polymer that is applied to 20-40 mil thickness. Surfaces to be coated do not require preheating and complex shapes can easily be covered. Typical applications: Tank interiors and exteriors, pumps, valves, drum dryers, ducts, and filters.—The Pfaudler Co., Rochester, N. Y.

Circle 282 on Reader Service Card

Epoxy Cement, for repointing eroded brick floors, is acid-proof, easily applied, and does not shrink. Called Floor Grout, it sets overnight so floors are ready for use next morning. — Drehmann Paving and Flooring Co., Gaul and Tioga Sts., Philadelphia.

Circle 283 on Reader Service Card

INGREDIENTS

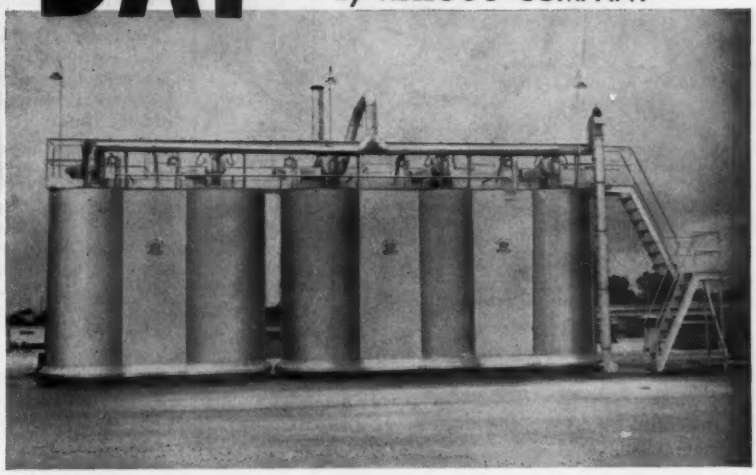
All-Vegetable Emulsifier for yeast-raised goods helps retain product softness, while providing finer grain and smooth texture. Called Atmul 650, it may be added at either sponge or dough stage, no premixing or blending required.—R. T. Vanderbilt Co., 230 Park Ave., New York City.

Circle 284 on Reader Service Card

Versatile Chelating Agent (Versene CA) now has FDA clearance (subject to tolerances) for use in non-standardized dressings, sauces, sandwich spreads, and malt beverages. Product inactivates trace metals having adverse effect on color, clarity, and stability.—Dow Chemical Co., Technical Service & Development Dept., Midland, Mich.

Circle 285 on Reader Service Card

DAY *plant proven bulk storage tanks used for rice tempering by KELLOGG COMPANY*



Battery of 5 DAY Insulated Tanks Serving Kellogg's Memphis Plant

Rice for America's most popular rice cereal, Kellogg's Rice Krispies, is tempered in this battery of 5 DAY insulated bulk storage tanks. Located in Kellogg's Memphis, Tennessee, plant, these tanks are 8 feet in diameter and 30 feet high. Designed and built by DAY, they are made of galvanized steel and have 3½ inch insulation covered with an aluminum jacket. In addition to these rice tempering tanks and a bulk sugar storage tank, DAY also supplied dust control equipment including filters and cyclones.

DAY engineered, designed and fabricated this equipment for Kellogg. Experienced DAY construction crews made the installation. Because of this type of service more and more companies are seeking DAY advice and using DAY equipment for pneumatic conveying, bulk storage and dust control. They know this equipment is built for their *specific* plant requirements.

For complete information write toDAY for free bulletins and the address of your nearby DAY representative.

The **DAY** *Company*

SOLD in UNITED STATES by
The DAY SALES Company
817 Third Avenue N.E.
Minneapolis 13, Minnesota

MADE and SOLD in CANADA by
The DAY Company of Canada Limited
Rexdale (Toronto), Ontario, Canada
Fort William, Ontario, Canada

Representatives in Principal Cities

EXPERIENCE ENGINEERED . . . LABORATORY TESTED . . . PLANT PROVEN
Dust Control • Pneumatic Conveying • Bulk Storage
EQUIPMENT . . . SYSTEMS . . . INSTALLATION

FLAVOREX

Jamaica Style

RUM FLAVOR

... puts the "YUM" in your product!

• Delight the palates of young pirates and their parents by adding Flavorex Rum Flavor to your product. Great for a *hearty accent!* Exquisitely exotic as an *extra touch of flavor!*

• Use Flavorex Rum Flavor in *baked goods, confections, puddings, eggnog mixes, ice cream,* and other foods. You'll be doubly rewarded these ways . . . perfect for your present formulas . . . helps earn consumers' preference for your product.

• Flavorex Jamaica Style Rum is a flavor concentrate of natural and synthetic esters produced in our own plant and blended by our masters of the art. Run a batch test. You'll discover that every fragrant drop adds mellow tropical sunshine to your product. Write for free sample, or place a trial order today.

Rum Flavor No. B224 . . . $12 per gallon

Better Flavors for Better Products

FLAVOREX CO., INC.

302 S. CENTRAL AVE., BALTIMORE 2, MD.

JUST OFF THE PRESS

PLANT ENGINEERING

Condulets. Details type of units needed for protection in corrotable areas. 18p.—Crouse-Hinds Co., Syracuse, N. Y. (301)

Pipeline Strainers. Describes construction and features of units for condensate, steam, water, oil, air, gas, and other piped fluids. 4p. — Sarco Co., N. Y. C. (304)

Heat Exchangers. Covers features of 3-in. low pressure double pipe models for all types of duty. 8p.—Brown Fintube Co., Elyria, Ohio. (305)

Air Control Valves. Illustrates 2, 3, 4-way valves, and sub-base mounted 4-way and 4-way 5-port models. Includes installation and selection information. 40p.—Hoffman-Odom Co., Dayton, Ohio. (306)

Plastic Parts. Provides photos and specs of stock units and special shapes. 16p. — Garlock of Canada Ltd., Toronto, Ontario. (303)

Cylinders. Includes specs for all bore sizes. Miller Fluid Power, Flick-Reedy Corp., Bensenville, Ill. (307)

Motor Protection. Describes silicon rubber windings for form wound motors. U. S. Electrical Motors Inc., Milford, Conn. (308)

Drives. Describes and illustrates variable speed units. 10p. — Graham Transmissions Inc., Menomonee Falls, Wis. (302)

Wear Rings. Details replaceable units for die housings and covers for Ace Mills. Sprout, Waldron & Co., Inc., Muncy, Pa. (310)

Sheaves. Catalog provides features and specs of complete line. 24p.—Browning Manufacturing Co., Maysville, Ky. (311)

PACKAGING

Carton Set-Up Machines. Describes line of set-up and closing units for cartons to 14x8 in. and as small as 2x5/16 in. 4p.—Thiele Packaging Machinery Co., St. Paul, Minn. (331)

Films. Details inert-gas packaging in film-combination materials. 8p.—E. I. DuPont de Nemours & Co., Wilmington, Del. (330)

Fitment Applicator. Provides specs of independently operating unit which applies solid or perforated covers to metal, cardboard, or plastic containers. 2p.—Resina Automatic Machinery Co., Brooklyn, N. Y. (332)

Resin. Describes new polyvinylidene chloride latex, Resyn 3600. National Starch and Chemical Corp., N.Y.C. (329)

MATERIALS HANDLING

Conveyors. Explains principles of adjustable pressure operation for live roller units. 4p. — Rapids-Standard Co., Inc., Grand Rapids, Mich. (356)

Fork Truck Weighing Attachment. Describes flexible unit for in-transit weighing. 4p.—Clark Equipment Co., Battle Creek, Mich. (357)

Narrow Aisle Truck. Describes model for transporting loads through narrow spaces. 1p.—Lewis Shepard Products Inc., Watertown, Mass. (358)

Control Systems. Discusses methods of handling and controlling can-lines in automation. 12p. — Peco Corp., Mountain View, Calif. (359)

Automatic Weighing. Illustrates and diagrams systems and components. Dynametrics Corp., Burlington, Mass. (360)

Bin Boxes. Contains information on high-capacity containers, specs of units. 12p.—National Wooden Box Assoc., Washington, D. C. (361)

Conveyors. Details "walking beam" unit for pallet return systems, press feeding, transferrence, etc. 6p.

—Conveyor Corp., St. Clair Shores, Mich. (365)

PROCESSING

Filters & Strainers. Describes line of quick coupling, non-shortcircuiting, space-saving units. 4p.—Ronnington-Petter Co., Vicksburg, Mich. (317)

Heat Transfer. Gives specs for lab and production solids processing equipment. 20p. — The Patterson-Kelly Co., East Stroudsburg, Pa. (319)

Stunning Equipment. Describes large and small capacity electric units. 4p.—Cincinnati Butcher's Supply Co., Cincinnati, Ohio. (328)

Cooker-Extruder. Details use of steam in continuous unit, designed to handle starches through more efficient process. 2p.—Sprout, Waldron & Co., Inc., Muncy, Pa. (321)

Water Treatment. Describes typical instrumentation systems used in processing industries. 30p. — Minneapolis-Honeywell Regulator Co., Phila., Pa. (325)

Mixers. Diagrams colloid mill for disintegration of slurries and bacterial cells, spores, molds, etc. 2p.—Gifford-Wood Co., Hudson, N. Y. (326)

SANITATION & MAINTENANCE

Protective Coatings. Provides specs and descriptions of heat resistant silicones. 20p.—The Dampney Co., Boston, Mass. (343)

Vacuum Cleaning Tools. Describes new line for central systems, featuring aluminum heads and wands, one piece bodies, and steel swivels. 8p.—Lamson Corp., Syracuse, N.Y. (348)

Dairy Sanitation. New edition of purchasing guide describes products for all types of cleaning and sanitizing in milk-processing plants. 6p.—The Diversey Corp., Chicago. (349)

Ultrasonic Cleaning. Describes features of sound wave method employing self tuning principle. 4p.—Ultrasonic Corp., Garden City, N.Y. (351)

Seals. Details engineering and application of compact, ready-to-install models. 8p.—Garlock, Inc., Palmyra, N. Y. (353)

Tank Services. Brochure outlines list of services to processors. Includes chart of sizes for wine and juice handling. 4p. — The Bishopric Products Co., Cincinnati, Ohio. (354)

INSTRUMENTS

Magnetic Gage. Describes liquid level model in sealed container, for use where glass is impractical. 6p.—Jerguson Gage & Valve Co., Burlington, Mass. (373)

Glass Apparatus. Illustrates and describes 29 new lab items in firm's line. 16p.—Scientific Glass Apparatus Co., Bloomfield, N. J. (374)

Gas Chromatography. Research notes include applications and apparatus. 8p.—Wilkins Instrument Co., Walnut Creek, Calif. (378)

Measurement. Contains specs and illustrations for two units used in determining fluid rates of flow and warning of abnormal flow rates. 4p.—Schutte & Koerting Co., Cornwells Heights, Pa. (379)

Lab Apparatus. Provides specs of firm's line. 20p.—Burrell Corp., Pittsburgh, Pa. (322)

INGREDIENTS

Additives. Gives properties, specs and applications of Versene CA (calcium EDTA), used to deactivate trace metals having adverse effects on food characteristics. 18p.—Dow Chemical of Canada Ltd., Sarnia, Ontario. (347)

Emulsifier. Describes all vegetable "mono" ingredient (Atmul 650) for use in baked goods. 7p.—Atlas Co., Wilmington, Del. (352)

Food Colors. Contains technical data on ingredients

"We use a Heil Dryer to dewater a mixture of partially dried corn fibers and concentrated proteinaceous corn steepwater. The mixture enters the drier at 35% H_2O, and leaves at 11%. After grinding and classifying, this constitutes our commercial corn gluten feed.

"The mixture fed to the drier is of a sticky nature which tends to form partially dried dark pills in long retention-type driers. The Heil dryer, being a short retention-type drier is the only one of this class tested which produces a final product showing little or no tendency to "pack" during a subsequent storage or shipment.

"The Heil Dryer has enabled us to handle large volumes of feed with a minimum of floor space, low maintenance, good fuel economy and excellent temperature and moisture control. It is also capable of being operated, unhoused, under all types of weather conditions.

"We are starting a program this year to rehabilitate our entire corn residue drying plant and expect to install five or six of these Heil units for corn gluten feed and corn gluten meal dehydration service."

Assistant Plant Manager
Engineering and Mechanical
AMERICAN MAIZE-PRODUCTS COMPANY
Roby, Indiana

Heil dries corn products

Cutaway view showing cylinders and the compound showering flights.

Dryer controls moisture. Food by-products are carried on a stream of hot air in the Heil dryer. Having 3 cylinders in one drum automatically gives each particle correct exposure time based upon its weight due to moisture content. Compound showering flights assure ideal use of drying medium, air activity in all areas of the drum and maximum evaporation within a compact machine. Accurate temperature controls assure exceptional quality and color.

Write, wire or call for details.

THE HEIL CO.
(Manufacturers of Ardrier Dehydrators for the Arnold Dryer Co.)
3000 W. Montana Street, Milwaukee 1, Wis.

Always Crisp & Neat!

Tiara Headbands

The newest Paperlynen Tiara styling is a pleat design that simulates lace in filmy pastel colors — smartly and comfortably worn with bobby pins. Plenty of area for imprinting — cost about 3½¢ each in 1000 quantities . . . less than laundry expense — always provide neat, uniform appearance.
☐ Check here for samples and details.

PAPERLYNEN CAPS

This is the approved sanitary headcovering that's made of paper embossed like linen with patented adjustable headsize. Specially printed with your advertising message on both sides in 1000 quantities about 4¢ per wearer.

☐ Check for free samples and details.

PALCONET — is the approved sanitary hairnet & headband combination for lady food handlers. Lightweight, it comfortably encloses the hair and retains hair styling. Available with plastic or paper headbands. Nylon net in colors.
☐ Check if you would like samples & prices!

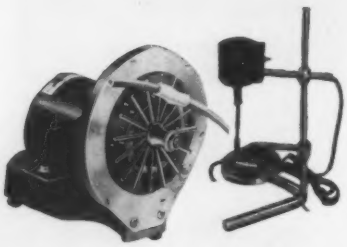
Want FREE Samples — Clip Adv & attach to letterhead

For name of your nearby Paperlynen Distributor please write:

THE PAPERLYNEN COMPANY
555 West Goodale St. Dept. G-9
Columbus 16, Ohio

CIRCLE 15 ON READER SERVICE CARD

LOW COST PUMP
for Laboratory Use



- Pumps Liquids, Gases, Slurries
- No stuffing boxes
- No shaft seals
- No check valves
- Non contaminating

The New "Kinetic Clamp" Pump

Operates by the action of radial arms successively pressing on a loop of flexible tubing. The mechanism clamps one arm against the tubing while the next arm descends to clamping position. Previous clamping arm then raises to permit tubing to assume its normal shape and again fill with liquid being moved.

Standard types of laboratory tubing in a wide range of materials provide a pumping member for almost any liquid, slurry or gas. Tubing can be changed quickly eliminating necessity of cleaning pump. There is no danger of corrosion or contamination.

Pumps can be furnished with motor or for driving from laboratory stirring motor. Write for literature and prices.

SIGMAMOTOR, INC.

22 N. Main Street • Middleport, N. Y.

for use in products where added color is permitted. 1p.—Marschall Dairy Laboratory, Inc., Madison, Wis. (355)

Compounds. Two price lists note firm's of biochemicals and radiochemicals, plus amino acid derivatives and polyamino acids. 38p.—Schwarz BioResearch, Inc., Mount Vernon, N.Y. (362)

Preservatives. Describes features of preserving neutral or slightly alkaline foods with Methylparaben and Prophylparaben. 10p.—Heyden Newport Chemical Corp., N.Y.C. (363)

Chemicals. Catalog lists firm's complete line of chemicals alphabetically, with physical data and uses. 36p.—Food Machinery & Chemical Corp., N.Y.C. (364)

MARKETING

Consumer Analysis. Provides market data covering shopping habits, residence, preferred shopping days, and newspaper readership as related to public's buying attitude toward new products. Has national implications. 50p.—Southern Nevada Consumer Research Bureau, Las Vegas. (381)

Economic Study. Deals with trends in incomes of '50s, including statistics on incomes by age and education. 4p. — Miami Univ., Ohio. (382)

Market Research. Gives suggestions on selection of services in small business field. Includes types of help available and cost of operations. 8p.—Small Business Administration, Washington, D. C. (383)

Distribution Analysis. Examination of concentration in Arizona, with emphasis on food industry trends. 24p. — University of Arizona, Tucson. (384)

Sales Techniques. Thumbnails ad schedule, promotion theme and display material used by 13 leading food manufacturers. 28p.—McCalls, N.Y.C. (385)

U.S. Population Growth. Study shows population increase in metropolitan and non-metropolitan areas. 3p. —The Curtis Publishing Co., Philadelphia. (396)

Brand Preference Study. Report by questionnaire of Salisbury and Rowan County, N.C., areas. 15p.—Salisbury Evening Post, Salisbury, N. C. (398)

Snack Market. Study summarizes report on types of snacks eaten and where consumed. 18p.—The Curtis Publishing Co., Philadelphia. (395)

MANAGEMENT

Financial. Details means of providing capital for your firm. 4p.—Small Business Administration, Washington, D. C. (399)

Data Processing. Describes features of Univac Service Centers.—Remington Rand, N.Y.C. (397)

Wage Hour Law and Canning. Bulletin describes minimum wage, overtime pay and child labor restrictions in canning operations as affected by Fair Labor Standards Act. 20p.—U. S. Dept. of Labor, Washington, D. C. (391)

Controlling Executive Time. Bulletin No. 76 explains methods of better planning and control of executive hours spent in running a business. 4p.—Small Business Administration, Washington, D. C. (392)

Executive Philosophy & Problems. Bibliographic survey lists reading and research in fields of personnel, management, human relations, training and development. 39p. — National Assn. of Manufacturers, N.Y.C. (393)

Manufacturers' Agents Directory. Lists 2,600 agent members alphabetically and geographically, showing lines handled and territories covered by each. 76p.—Manufacturers' Agents National Assn., Alhambra, Calif. (390)

Small Plant Accounting. Role of responsibility accounting in management of small manufacturing plants is described. Small Business Administration, Washington, D.C. (394)

STEPHENS-ADAMSON

EXCLUSIVE

"ZIPPER"*

CLOSED-BELT

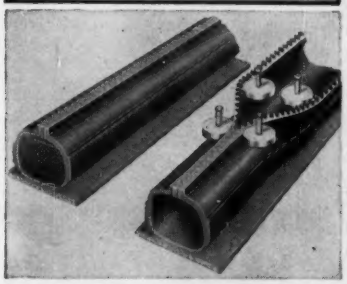
CONVEYOR-ELEVATORS

LOADING AND UNLOADING CYCLE OF "ZIPPER" CONVEYOR

1. Sidewalls brought into vertical position and ready for loading.

2. Flexible tube completely closed for conveying and elevating.

3. Rubber ZIPPER belt open for discharge, cleaning and return run.



Upper left unit closed and loaded. Lower right shows how belt is opened and closed by system of ball bearing rollers. (Rollers are mounted on a rigid framework)

CONVEYS AND ELEVATES BY CONTINUALLY WRAPPING MATERIAL IN A PACKAGE... MOVING THE PACKAGE AND ITS CONTENTS TO A NEW LOCATION AND GENTLY UNWRAPPING IT!

Literally a moving material-carrying conduit, the ZIPPER Conveyor is capable of transporting bulk materials in any plane, to considerable heights and around obstructions. Its great advantage is that bulk materials may be conveyed within the belt completely sealed and dust-tight. Material doesn't slide, isn't scooped, pushed or thrown but is gently carried over great distances without breakage, agitation or segregation. The ZIPPER Conveyor-Elevator provides versatility of layout and profitable material handling advantages you won't want to overlook.

*PATENTED

WRITE FOR BULLETIN 349

ENGINEERING DIVISION

STEPHENS-ADAMSON MFG. CO.

GENERAL OFFICE & MAIN PLANT, 6 RIDGEWAY AVENUE, AURORA, ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA • CLARKSDALE, MISSISSIPPI
BELLEVILLE, ONTARIO

CIRCLE 155 ON READER SERVICE CARD 155

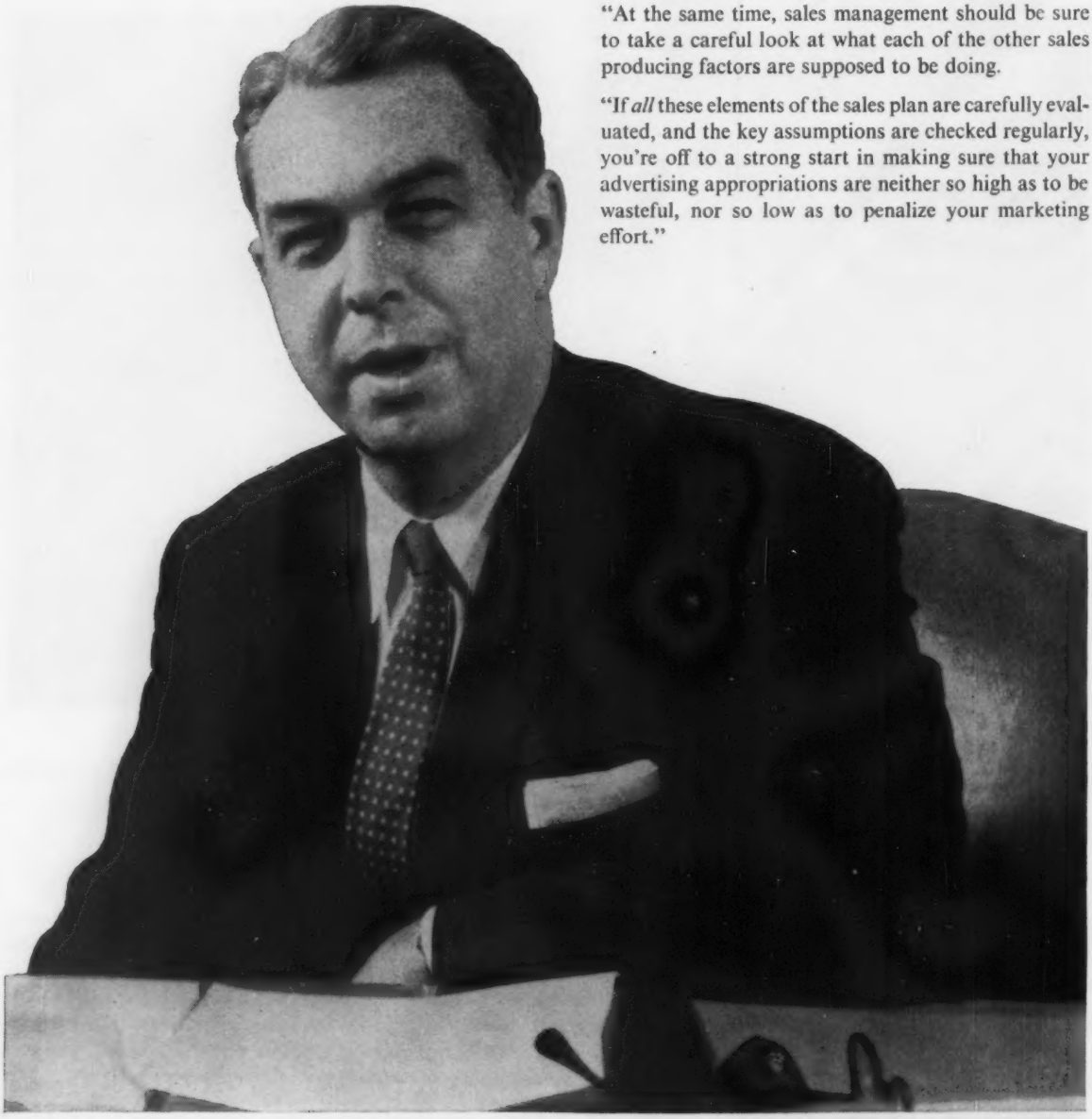
"How much is enough for advertising?"

JOHN R. SARGENT, partner in the nationally-known management consultant firm of Cresap, McCormick and Paget, points the way toward solution of one of top management's knottiest problems.

"Good sales management generally knows the crucial sales problems faced by each one of its products. Through good advertising advice plus experience, trial and error, and some judicious advertising testing, sales management also can come to have a good understanding of what advertising can and cannot do.

"At the same time, sales management should be sure to take a careful look at what each of the other sales producing factors are supposed to be doing.

"If *all* these elements of the sales plan are carefully evaluated, and the key assumptions are checked regularly, you're off to a strong start in making sure that your advertising appropriations are neither so high as to be wasteful, nor so low as to penalize your marketing effort."



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An organization of over 4000 members engaged in the advertising and marketing of industrial products, with local chapters in ALBANY, BALTIMORE, BOSTON, BUFFALO, CHICAGO, CLEVELAND, COLUMBUS, DALLAS, DENVER, DETROIT, HAMILTON, ONT., HARTFORD, HOUSTON, INDIANAPOLIS, LOS ANGELES, MILWAUKEE, MINNEAPOLIS, MONTREAL, QUE., NEWARK, NEW YORK, PHILADELPHIA, PHOENIX, PITTSBURGH, PORTLAND, ROCHESTER, ST. LOUIS, SAN FRANCISCO, TORONTO, ONT., TULSA, YOUNGSTOWN.

USEFUL NEW BOOKS

Processing Guide

FOOD CHEMISTRY *by Lillian H. Meyer, Reinhold Publishing Corp., N.Y.C. 1960. 385p. Price: $8.10.*

More than a text book, this volume provides a unified picture of foods from a chemical standpoint. Primary emphasis is placed on the composition of foods and the changes that occur when subjected to processing.

Chapter on food additives and the appendix on permissable food additives are special features which should prove valuable to research workers in the fields of food technology and chemistry.

Psychology In Management

PEOPLE, PROBLEMS AND PROFITS *by Saul W. Gellerman. McGraw-Hill Book Co., 330 W. 42nd St., N.Y.C. 36. 1960. 254p. Price: $5.95.*

Author tells how you can have better employee relations, improved communications at all levels, and greater productivity.

Book stresses actual management situations in clear, understandable terms. Realistic explanations are given of such topics as the psychology of using psychology; the company personality; the art of making sense; face-to-face management; a philosophy for mature management; and much more.

Designed for anyone in business concerned with the management of people, it can help you develop a growth-minded management to provide a growth-minded organization.

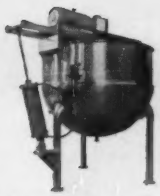
Baker's Guide

BAKERY TECHNOLOGY AND ENGINEERING *Ed. by Samuel A. Matz. AVI Publishing Co., Box 388, Westport, Conn. 1960. 650p. Price: $15.00.*

A scientific and engineering approach to baking, publication contains extensive descriptions of the primary raw materials in addition to discussions of fundamental techniques applied to doughs and batters. Special attention is given to automation technology.

Unique section devoted to product quality and economics of production should make this volume of considerable interest to marketing and sales personel as well as food technologists.

SA—streamlined balloon jacket design. Extra large diameter provides greater heating surface. Sizes 15 to 500 gallons. Constructed for steam working pressures of 40, 90 and 125 pounds.

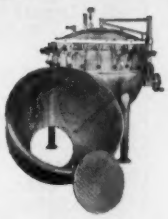


SA MIX COOKER—has single or double motion agitator with or without hydraulic lift. Agitator lifts easily and smoothly out of cooker. Sizes 30 to 500 gallons.

CW—designed to process batches up to 150 gallons. Positive worm gear. Handwheel gives control of capacity loads while tilting. Large diameter kettle gives fast even cooking.

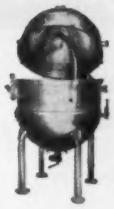
BUILT-IN QUALITY

. . . IN HAMILTON SPECIAL OR STANDARD KETTLES ASSURES LOWER PROCESSING COSTS



PC—stainless steel pressure cooking kettle for meat and poultry processing. 90 p.s.i. in jacket and 15 p.s.i. in kettle. Quick opening latches. Top is lifted by eccentric lever. Sizes 30 to 250 gallons.

HV—vacuum cooker from 150 to 500 gallons. Hinged manhole provides access to the inside. Available with a mixer—circulator can be installed to increase heat transfer and agitation.



VT—vacuum cooker has no equal for small batches. Tilting top easy loading. Sizes 30 to 150 gallons. Jacketed for 90 p.s.i. steam working pressure.

SPECIAL—PC Style Pressure type mix-cooker. Jacket to full 200 gal. level. Plate type heating-cooking coils arranged to act as agitator baffle plates. Entire unit removable for easy cleaning.

Hamilton offers the right kettle for any mixing or cooking job. The Cost? Reasonable and economical in the light of finished and polished fabrication. Sanitation guaranteed. Careful competent workmanship and constant inspection assures you of quality that is built-in. We'll work from your prints or create them for you on our drawing boards. Write for free Hamilton Kettle Catalogue.

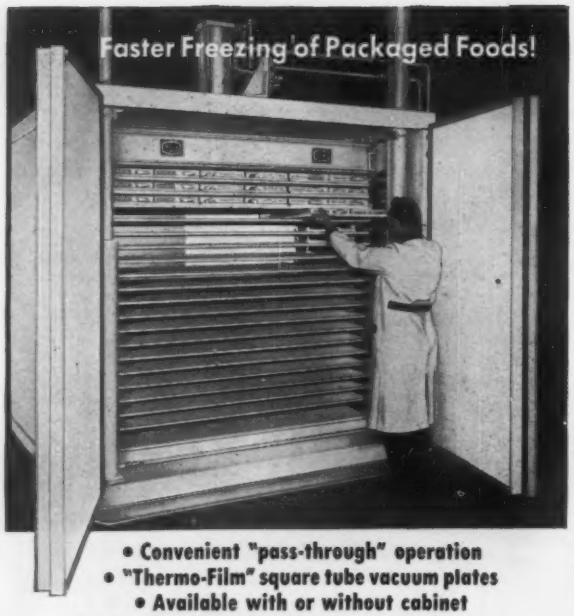
ESTABLISHED 1874

HAMILTON Kettles

COPPER AND BRASS WORKS

DIVISION OF BRIGHTON CORP.

820 STATE AVENUE, CINCINNATI 4, OHIO



• Convenient "pass-through" operation
• "Thermo-Film" square tube vacuum plates
• Available with or without cabinet

DOLE REFRIGERATING COMPANY
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103 PARK AVENUE, NEW YORK 17, N.Y.
DOLE REFRIGERATING PRODUCTS LIMITED
OAKVILLE, ONTARIO, CANADA

Write for Engineering Catalog FE

Freze-Cel DOUBLE CONTACT PLATE FREEZER

DOLE THE Cel LINE

CIRCLE 20 ON READER SERVICE CARD

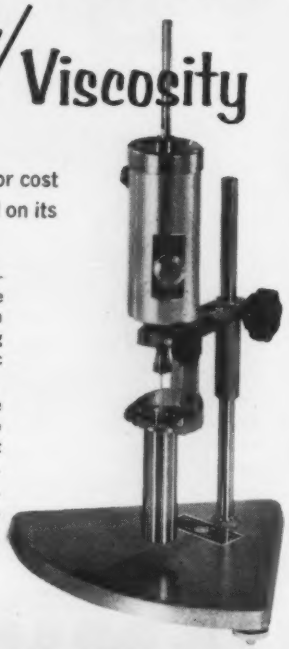
Rheology / Viscosity

Does the quality or cost of your product depend on its flow characteristics?

► A complete line of Epprecht Viscometers provide viscosity measurements in the laboratory or during processing with automatic control of viscosity.

► Measurements can be made at pressures up to 700 psi or in a vacuum at temperatures to 300° C.

For detailed technical information on Epprecht Viscometers write to Dept. DV-6.



J. W. FECKER DIVISION
AMERICAN OPTICAL COMPANY

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RECENT INVENTIONS

PRODUCTS

Baking Powder Containing Insoluble Hydrated Silicate.—F. G. Miller, General Foods Corp., White Plains, N. Y. No. 2,933,396.

Egg White With Improved Whipping Properties by Including Ester of Polyhydric Alcohol. — V. F. Maturi, Standard Brands, Inc., N.Y.C. No. 2,933,397.

Meat Flavor Made by Heating an Amino Reagent in Presence of Water at Elevated Temperature.—C. G. May, Lever Bros. Co., N.Y.C. No. 2,934,435.

Frozen Milk Product Mix Additive Comprising Glyceryl Mono Stearate.—A. Miller, Kelco Co., San Diego, Calif. No. 2,935,406.

Powdered Alkali Alginate, Alkali Carbonate and Calcium Sulphate Mix That Dissolves in Milk and Sets Into Jelly.—R. H. McDowell, Alginate Industries Ltd., London, England, No. 2,-935,409.

Food Preservative Made from Juices Extracted From Corn, Tomato and Dandelion Plants.—V. J. De Santa Luce, Long Beach, Calif. No. 2,937,948.

PROCESSING

Edible Mushroom Mycelium by Fermentation.—V. P. Cirillo, Anheuser-Busch, Inc., St. Louis. No. 2,928,-210.

Making Wine by Concentrating and Fermenting Portion of Filtered Fruit Juice Then Adding Back to Remainder.—R. W. Arengo-Jones, Dorval, Quebec, Canada. No. 2,928,741.

Preparing Flaked Cereal Product Thickening With Liquid.—R. Rutgers, Alkmaar, Netherlands. No. 2,-928,743.

Comminuting Fruit in Presence of Malic Acid and Separating Juice From Pulp. — J. P. Ponting, USDA, No. 2,928,744.

Producing Confectioners' Hard Butter From Palm Kernel Oil.—A. Roylance, Lever Bros. Co., N. Y. C. No. 2,928,745.

Pumping Breading Stuffing Mix Into Fowl Prior to Freezing.—A. B. Rogers, Armour and Co., Chicago. No. 2,928,748.

Incorporating Edible Fatty Acid In Instant Coffee to Reduce Foaming.—W. E. Barch, Standard Brands Inc., N. Y. C. No. 2,929,716.

Dehydrating Coffee Extract Into Thin Film That's Vacuum-Heated, Cooled, Ground to Powder.—R. K. Eskew, USDA, No. 2,929,-717.

Slicing Apples Then Treating by Steaming, Starch-Dusting, Baking.—S. J. Mattis, Hasbrouck Heights, N.J. No. 2,929,718.

Preparing Puree Product From Whole Citrus Fruits. —H. Walburn, Washington, D. C. No. 2,929,719.

Water-Soaking Partially De-Branned Wheat Grains to 40-60% Moisture Prior to Sterilizing in Cans.—M. J. Copley, USDA, No. 2,-929,725.

Producing Quick-Cooking Cereal Product. — F. J. Miller, General Foods Corp., White Plains, N.Y. No. 2,930,697.

Adding Edible Fumaric Acid in Preparation of Angel Food Cake. — W. E. Barch, Standard Brands Inc., N.Y.C. No. 2,930,698.

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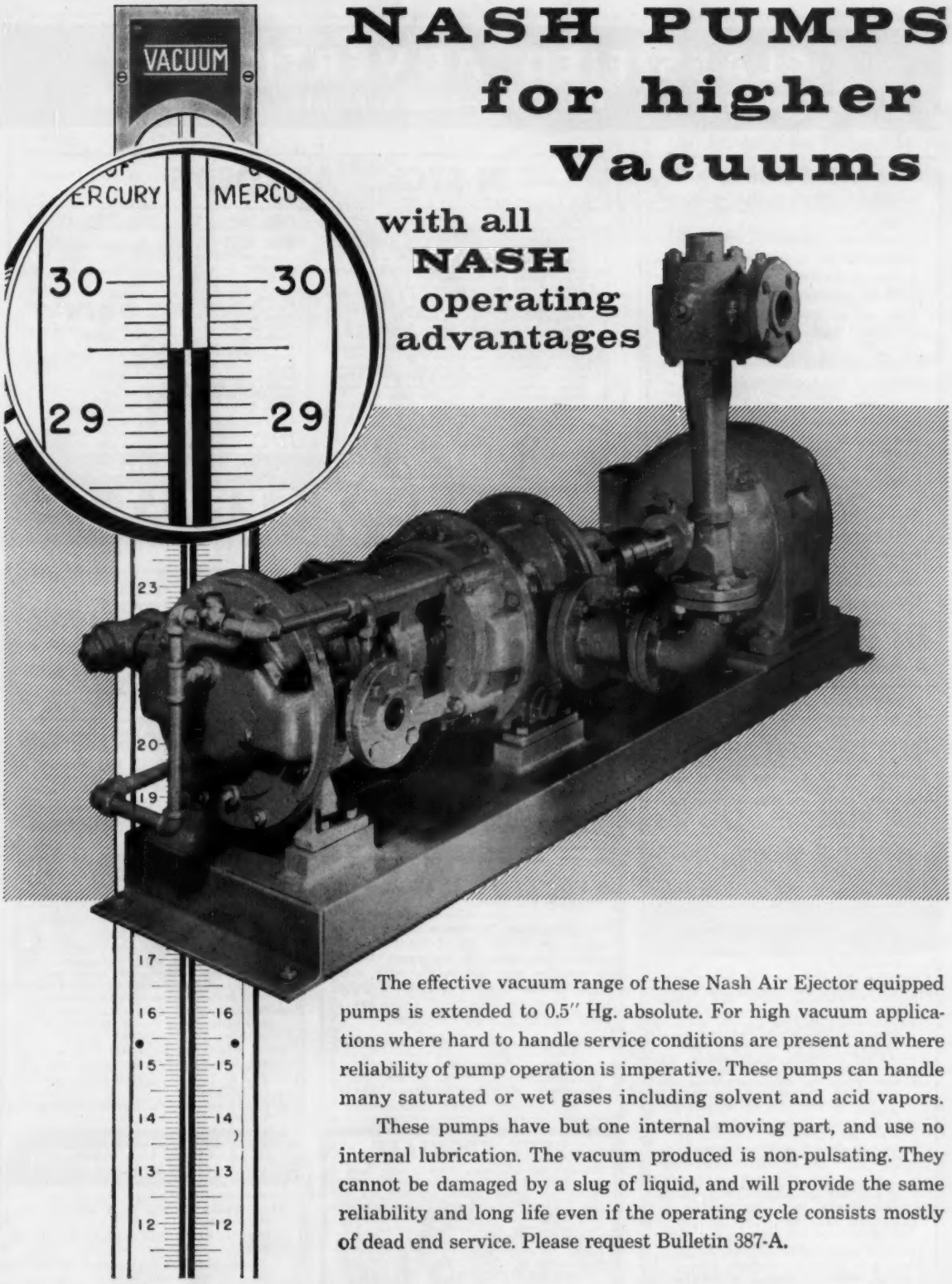

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2—Bantam Mikro Atomizers S.S.

BRILL EQUIPMENT COMPANY

35-37 Jabez St., Newark 5, N. J.
OR
4101 San Jacinto, Houston 4, Texas

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FMC Automatic No. 10 Can Filler Model No. 60; 6 Stainless Spouts.
Hope Stainless 4 Piston Filler.
FMC Hand-Pack Filler; 30 (2") Ports.
Horix Gravity-Vac. 14 Spout Filler
3 Pneumatic Scale Aut. Lines incl. 16 Sp. S.S. Rotary Filler, Duplex Labeler, Bottle Cleaner, Screw Capper.
Stokes & Smith Powder Fillers.
Triangle Elec-tri-Pak 4 Station Conveyor Type Model SO Packager.
N.J. Poney Labelrite Labelers.
Can Labelers by Standard-Knapp, FMC., Kyler, Burt and others.
Stainless Steel Kettles-Tanks.
Stainless Steel Vacuum Pans.
Continental Panama Can Closer
Standard Knapp Case Sealer #429
Urschel, Anderson & Sterling Dicers

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1—Elgin Screw Capper.
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1—N. J. Model MX Pony Labeler.
1—Stainless Steel 60 Gal. Change Can Mixer.
1—Cyclotherm Package Boiler 250 psi, 600# hr.
2—S. S. Tanks—500 & 600 Gals.
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1—Triangle Carton Gluer & Sealer.
5—Hercules 16" & 8" sq. Type 316 Stainless Steel Filters.
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STAINLESS KETTLES
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9—Lee 150 Gallon Stainless Steel Jacketed Kettles. Complete with Covers. Guaranteed condition.

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Pneumatic Scale High Speed Cartoning Line (also 30 CPM).
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Standard Knapp High Speed Can Labelers.

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RPM INC.
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FOR SALE

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Model MPUS-15 Miller Wrapper
Model MPUS-17 Miller Wrapper & Sheeter
20-gal. Stainless Steam Jacket Kettle with 1½" outlet for 100-lb. WSP.
300-gal. Copper Still with Condenser and Tank.
100-gal. Read Jacketed Double Armed Dough Mixer.

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2638 Gladys Ave. Chicago 12, Ill.

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Package Engineering Company, Model FF, Wrapping Machine with infeed conveyor and electric eye registration. Good operating condition.

BOX FE-18
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Ingredients for The Food Processor

Carrot Oil Makes Food Golden Yellow

Like butter, carrot oil contains natural carotene—not synthetic. Used for vitaminizing food products where a yellow color is desired. No fishy odor or taste. Send for catalog and sample.

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Basic responsibility for Research and Development techniques in the formulation of new products and improvement of current products. Ph.D. or Masters degree in Chemistry, Food Technology or related science is required. Research experience necessary. Experience in foods preferred.

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Assume responsibility for process development in the field of dehydration. Ph.D. or M.S. in Chemical Engineering highly desirable, plus 3-5 years experience in Research, in Food or Petroleum. Contact:

Calbert Butler
THE PILLSBURY COMPANY
Minneapolis 2, Minnesota

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FOOD ENGINEER

National food company desires man with B.S. in food technology or chemical engineering for opening in food product development. Work includes product formulation and process engineering. Experience in food industry desirable but not mandatory. Salary commensurate with training and experience. Write to Dr. G. Reed, Director of Research, Red Star Yeast and Products Co., P.O. Box 737, Milwaukee 1, Wisconsin.

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417 Rosehill Place, Elizabeth, New Jersey

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Legal Testimony
Write for bulletin describing facilities and services
230 Washington St., Mount Vernon, N. Y.
Phone: MO 4-1100 Cable: Swoknip

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Belt, permagloss. Sample & information, Lassiter Corp. —201

Conveyor belts, cyclone. Booklet, American Steel & Wire—202

Conveyor belts, steel. Lit., La Porte Mat & Mfg. Co. —203

Conveyor-elevators, closed belt. Bul. 349, Stephens-Adamson Mfg. Co.—204

Conveyor, solid belt. Details, Union Steel Products—205

Conveyor system, Cat., Lamson Corp.—206

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Linings, cementable conveyor belt. Cat. AD-177, Garlock Inc.—208

Tanks, insulated. Bul., Day Co.—209

Trucks, lift, gas operated. Details, Automatic Trans. Co.—210

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Vacuum cooker, fruit spread. Data, Mojonnier Bros. Co. —216

Pumps

Pumps, food. Bul. 34-FE, Robbins & Myers, Inc. —217

Pumps, kinetic clamp. Lit., Sigamotor, Inc.—218

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Hose, non-toxic, beverage. Bul. T-100, U. S. Stoneware—221

Nozzles, spray. Cat. SD-1, Delavan Mfg. Co.—222

Nozzles, spray. Cat. 24, Spraying Systems Co. —223

Valves, diaphragm. Information, Grinnel Co.—224

Motors, Transmissions

Chain, roller. Bul., Dodge Mfg. Corp.—225

Refrigeration, Air Conditioning, Compressors

Compressor, gas-driven. Bul. 017, Vilter Mfg. Co.—226

Freezer, package food. Cat. FE, Dole Refrigerating Co.—227

Heating - ventilating equipment. Bul., King Co. of Owatonna—228

Kathabar unit, type C. Facts, Surface Combustion Co. —229

Kathabar system. Facts, Surface Combustion Co.—230

Lubricants

Lubricants, grease & fluid. Data book, Fiske Bros. Mfg. Co.—231

Controls & Instruments

Centrifuges, continuous. Bul. 946, Flaudler Permutit, Inc.—232

Control systems. Cat. 500 MP, Taylor Instrument Co.—233

Controller, pneumatic. Data, The Bristol Co.—234

Feeder, amplitrol. Information, Chain Belt Co.—235

Indicator slips, retort. Test supply, Aseptic Thermo Indicator Co.—236

Meter, magnetic flow. Bul. 20-14, Foxboro Company —237

Scale feeders, meters, chlorinators. Details, Wallace & Tiernan, Inc.—238

Transmitter & receiver/controller. Booklet RG-757, Robertshaw - Fulton Co.—239

Ingredients, Chemicals, Additives

Citric acid. Tech. details, Miles Chemical Co.—240

Defoamer, silicone. Sample, Dow, Corning Corp.—241

Enzymes, pectinol. Samples & lit., Rohm & Haas Co. —242

Flavors. Cat., Fritzsche Bros. Inc.—243

Flavors, beef. Samples & data, Nestle Co., Inc.—244

Flavorings. "The Changing World of Food," Dodge & Olcott, Inc.—245

Flavorings, rum. Samples, Flavorex Co., Inc.—246

Gels, sugar-free. Tech. data, Sunkist Growers—247

Ingredients, high-protein. Information, Red Star Yeast & Prod. Co.—248

Propylene glycol. Price Information, Jefferson Chemical Co., Inc.—249

Proteinates, sodium. Facts, Griffith Labs., Inc.—250

Stabilizer, kelcoloid. Samples, Kelco Co.—500

Whey, dairy. Tech. bul., Western Condensing Co. —499

Packaging Machinery

Fillers, auger. Bul. P-811, Food Machinery & Chem. Corp.—498

Fillers, piston. Information, F. L. Burt Co.—497

Fillers, piston & gravity. Bul., Chemetron Corp.—496

Packaging machinery, printing attachment. Bul. RAP-1, Gottscho Co.—495

Sealer, carton. Details, Container Corp. of America —494

Packaging Materials

Cartons, display. Folder, Weyerhauser Co.—493

Cartons, folding. "Ingenuity" booklet, Weyerhauser Co. —492

Cartons, paper. Details, Western Waxide—491

Linings, parchment paper. Brochure, samples, Paterson Parchment Paper Co. —490

Packaging, paperboard. Illustrated brochure, Olin Mathieson—489

Rings, rubber, bottle cap. Details, Crown Cork & Seal Co.—488

Construction & Maintenance

Doors, cold storage. Bul., Jamison Cold Storage Door Co.—487

Maintenance equipment. Lit., Finnell Systems, Inc.—486

Walls, modular. Sample, booklet 2133, Engineered Products Dept.—485

Sanitation & Cleaning

Cleaning equipment, mechanized. Bul., Oakite Products, Inc.—484

Cleaners, dry acid. Bul., sample, E. I. du Pont de Nemours & Co.—483

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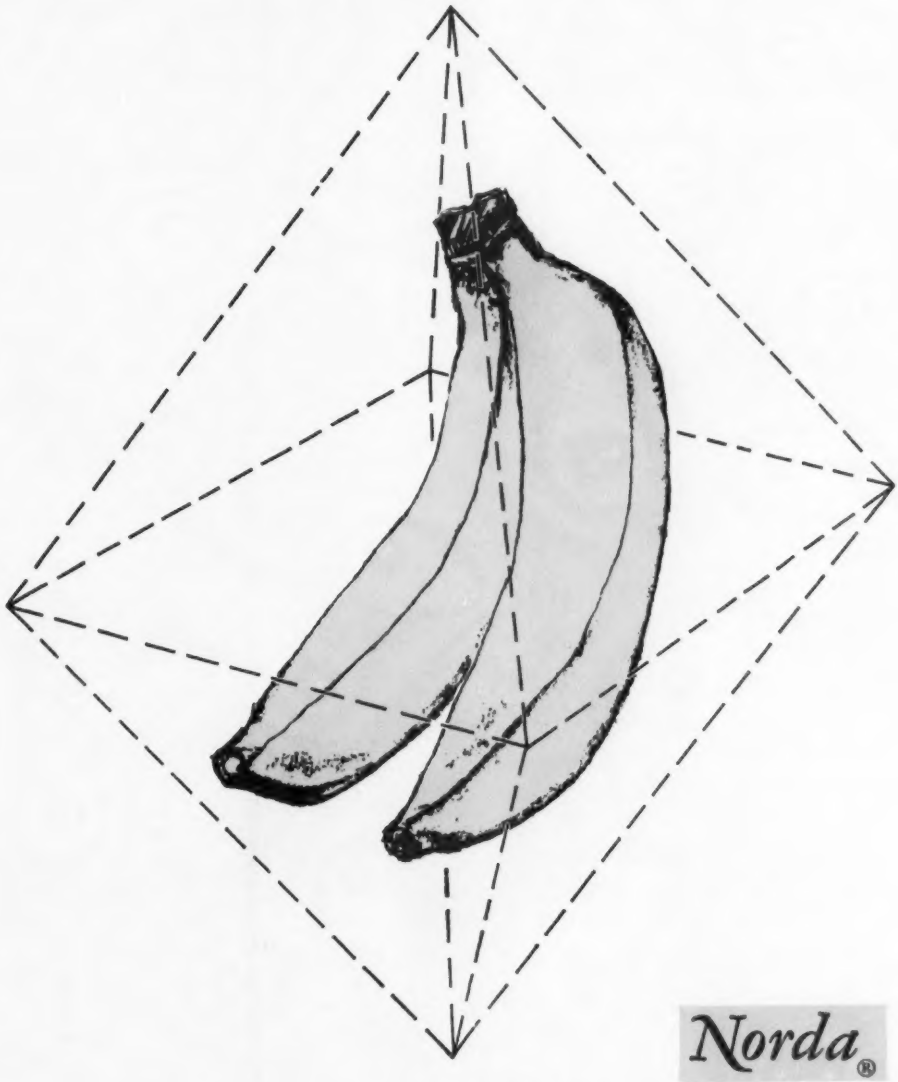

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